

OBSERVATIONS ON SOME AUSTRALIAN FOREST INSECTS.

7. The Significance of the *Glycaspis* spp. (HEMIPTERA: HOMOPTERA, Psyllidae) Associations with their *Eucalyptus* spp. Hosts; Erection of a New Subgenus and Descriptions of Thirty-eight New Species of *Glycaspis*.

By K. M. MOORE, Forestry Commission of New South Wales.

(Plates vi-vii; forty-eight Text-figures.)

[Read 26th April, 1961.]

Synopsis.

The genus *Glycaspis* Taylor 1960 is considered, and divided into two subgenera on the basis of morphological divergence among, and host-associations of, the species contained in it.

Those species which breed on *Eucalyptus* spp. hosts contained in Blakely's Renantherae-Renantherae Normales group, constitute the most primitive subgenus *Glycaspis* (*Glycaspis*): the remaining species representing a more recent evolutionary development and placed in the subgenus *Glycaspis* (*Alloglycaspis*) subgen. nov., do not breed on hosts contained in that eucalypt group. The significance of the *Glycaspis* spp.-*Eucalyptus* spp. host-associations is discussed.

Thirty-eight new species of *Glycaspis* are described; previously described species are considered, and the coverings made by nymphs are figured.

INTRODUCTION.

Species of the genus *Glycaspis* occur throughout the mainland of Australia and in Tasmania, and it is apparent that numerous species are as yet undescribed.

Large populations of *Glycaspis* spp. have consistently damaged a number of *Eucalyptus* spp. in coastal and highland areas of New South Wales for many years. During investigations in these areas on the cause of mortalities among *Eucalyptus saligna* Smith (Sydney blue gum) (Moore, 1959), it became evident that a complex of *Glycaspis* spp. occurred where damage by these psyllids was severe. Locations of attacked areas were from sea-level to an altitude of about 3,000 feet and numerous collections of specimens were made from these and other areas.

The Genus GLYCASPIS.

GLYCASPIS Taylor 1960.

Synonymy: *Psylla* Dobson, 1851, pp. 235-241, Pl. 18, fig. 4; *Spondyliaspis* Schwarz, 1898, p. 68; Froggatt, 1900, p. 288; Tuthill & Taylor, 1955, pp. 230-231, fig. 1; *Glycaspis* Taylor, 1960, p. 384, Pl. 1, figs 2 and 3.

Dobson (1851) described the species on which the genus *Glycaspis* is now based, and placed it in the genus *Psylla*.

Signoret (1879) erected the genus *Spondyliaspis* to which subsequently were assigned by Schwarz (1898), Froggatt (1900, 1903), and Tuthill & Taylor (1955) species now included in the genus *Glycaspis*.

The genus *Spondyliaspis* was re-defined in error by Schwarz (1898), Froggatt (1900) and Tuthill & Taylor (1955).

Taylor (1960) investigated the status of the genus *Spondyliaspis* and erected the genus *Glycaspis* to receive the species described by Dobson, Schwarz, Froggatt and Solomon (1936) which were erroneously assigned to *Spondyliaspis*.

Species of the genus *Glycaspis* are separated into two groups, each of which is given subgeneric status in this paper. The apparent host-specificity of most of the *Glycaspis* spp. occurring on *Eucalyptus* spp. suggested that an examination of both the psyllid and eucalypt taxonomy should be made, and when this was done it was estab-

lished that the two groups of *Glycaspis* spp. could be separated by (a) The *Eucalyptus* sp. host-group on which they consistently bred; (b) The comparative length of the M + Cu stem in the forewing venation; (c) The shape of Cu₁ in the hindwing venation; (d) The structure of the male claspers and aedeagus; and (e) The presence or absence of a small anterior spine on each meta-coxa.

Subgenus ALLOGLYCASPIS, subgen. nov.

(Greek: *allo-* = other, or strange.)

Type Species: *Glycaspis (Alloglycaspis) baileyi*, sp. nov. (here designated).

Type Locality: Lisarow, New South Wales.

(a) Species of *Glycaspis (Alloglycaspis)* do not breed on *Eucalyptus* spp. of the Renantherae-Renantherae Normales group (Blakely, 1955), whereas species of *Glycaspis (Glycaspis)* breed on host-plants of this group. (b) The stem of M + Cu in the venation of the forewing (fig. 1) is longer than that of species in *Glycaspis (Glycaspis)* (fig. 5). (c) The shape of Cu₁ in the hindwing venation (figs 2, 3 and 4) is distinct from that of *Glycaspis (Glycaspis)* (fig. 6). (d) Claspers of the males do not bear pads or strongly chitinized pegs on their internal faces as do those of *Glycaspis (Glycaspis)*, and the claspers and aedeagus are structurally distinct from those of *Glycaspis (Glycaspis)* spp. (see figures in descriptions of the species). (e) Species of *Glycaspis (Alloglycaspis)* do not bear a small anterior spine on each meta-coxa, as do species of *Glycaspis (Glycaspis)* (fig. 7).

The morphology and coloration of nymphs and adults in *Glycaspis (Alloglycaspis)* are more diverse than those of nymphs and adults in *Glycaspis (Glycaspis)*.

The GLYCASPIS-EUCALYPTUS ASSOCIATION.

The following comments are based on observations made only in New South Wales on the thirty-eight species of *Glycaspis* described in this paper.

Psyllids of the two subgenera are confined to *Eucalyptus* spp. hosts, but the degree of host-specificity within the genus *Eucalyptus* is at present imperfectly understood. It appears that some species of *Glycaspis* are not host-specific, but occur only on eucalypts of close affinity and, although not separated taxonomically in this paper, they may later be given subspecific or specific status.

From an examination of the present classification of the *Eucalyptus* spp. and the morphology of *Glycaspis* spp., it was determined that the evolutionary divergence within the psyllid group is closely associated with a probable evolutionary divergence within the eucalypt group.

(i) No psyllids of either subgenus are known to occur on *Angophora* spp. (at present regarded as close to the ancestral stock from which at least some *Eucalyptus* spp. have evolved) or on any of the *Eucalyptus* "bloodwood" group (included in Blakely's classification as Series iv and v), which contain the species of nearest affinity to *Angophora*. No information has been obtained on any *Glycaspis* spp. associations with the eucalypts in Series i to iii.

(ii) Species of *Glycaspis (Glycaspis)* have been reared from *Eucalyptus* spp. contained only in the following Section of Blakely's "Key to the Eucalypts": Section C. Renantherae (Series xxiv and xxv) and Renantherae (Normales) (Series xxvi to xxxiv)

As no eucalypt species contained in Section B occur in New South Wales, the occurrence of *Glycaspis* spp. on them has not been investigated.

(iii) Species of *Glycaspis (Alloglycaspis)* have been reared from *Eucalyptus* spp. contained in: Section A—Macrantherae (Series vi to xvi) and Macrantherae (Normales) (Series xvii to xxii); Section D—Porantheroideae (Series xxxv) and Porantheroideae (Normales) (Series xxxvi to xxxviii in part); Section E—Terminales (part Series xxxviii to xl). Froggatt refers to the occurrence of *Glycaspis* sp. on a host in Section F. No species are known to have been reared from hosts in Section G, Micrantherae (Series xlii), containing two eucalypt species only, one of which occurs on Kangaroo Island (South Australia), the other in Western Australia, or from Section H.

To assist with future identifications of *Glycaspis* spp., their host-plant associations are given in Table 1 (p. 131).

COVERINGS OF NYMPHS.

Within the genus as a whole, the coverings of the psyllid species are varied in form, and are here placed in five categories: (1) Foliage-galls (Pl. vi, fig. 1). (2) Flat lerps (Pl. vi, figs 2 and 3). These species are of close affinity to the gall-makers. (3) Round, conical lerps (Pl. vi, fig. 4; Pl. vii, figs 5-7) which also may be dome-shaped when reconstructed (Pl. vii, fig. 6). (4) Oval lerps (Pl. vii, fig. 8) which show varying degrees of ovality associated with particular species, intergradation between (3) and (4) thus occurring. (5) Rectangular lerps (Pl. vii, figs 9 and 10).

Species constructing galls are numerous within *Glycaspis* (*Glycaspis*) only, and species constructing flat lerps are confined to this subgenus. Species constructing round lerps appear to be the most numerous and widely distributed and occur in both subgenera (see Table 2). Species constructing oval lerps are numerous within *Glycaspis* (*Alloglycaspis*) only, and those constructing rectangular lerps are confined to this subgenus.

Numerous external filaments (Pl. vii, fig. 7) are usually present on the round lerps in either subgenus, as well as on oval and rectangular lerps in *Glycaspis* (*Alloglycaspis*). The use of characteristics of most lerps or galls for specific determination appears to be of no value.

Galls are variable in shape, size and wall-thickness. They have not been recorded as numerous in any one locality. Flat lerps are usually in the same plane as the leaf-surface, and cover a depression in the leaf-tissues which is caused by the feeding nymphs. They are opaque, dull, and more or less smooth in appearance. The lateral bases of some oval lerps are wider and more firmly attached to the leaf-surface than the bases of the extremities which are indefinitely attached. Rectangular lerps, which may be transparent, translucent or opaque, smooth and glassy or dull in appearance, are attached to the leaf-surface by the lateral bases only, and are arched and open at each extremity. These coverings thus indicate the evolutionary sequence within the genus; i.e., galls, flat lerps (semi-galls), round lerps, oval lerps, rectangular lerps.

The various types of coverings so far correlated with Blakely's eucalypt Series are given in Table 2.

In large populations of *Glycaspis* spp. the various types of lerps and galls may occur, round lerps usually being the most numerous, although occasionally rectangular lerps predominate. The more vigorous and younger foliage of coppice, epicormics or regeneration often appears to provide favourable conditions for a rapid increase in population of psyllids of either subgenus. Large populations of *Glycaspis* spp. have been correlated with young coppice and epicormic growth some months after fire had severely damaged the timber-stand.

EVOLUTION WITHIN GLYCASPIS SPP.

According to Eastop (1958), rhinaria occurring on the antennal segments of psyllids resemble those of aphids, and in most psyllids there is a single rhinarium at the apices of segments 4, 6, 8 and 9. He suggests that the presence of a single rhinarium at the apices of segments 4 to 9 inclusive and perhaps a number of rhinaria on segment 3 denotes a primitive condition, and that a similar condition is regarded as primitive in the Aphididae.

From a study of the thirty-eight *Glycaspis* spp. in these investigations it was determined that adults of the three species constructing rectangular lerps and regarded as the more recent and specialized species in the genus bear a rhinarium at the apices of antennal segments 4, 6, 8 and 9 (as is apparently the case with most psyllids); those constructing round, oval or flat lerps bear a rhinarium on segments 4, 5, 6, 8 and 9; and those constructing galls bear a rhinarium on segments 4 to 9 inclusive. The genus *Glycaspis* is thus considered to be a relatively primitive group, with those species constructing galls as the most primitive.

DISCUSSION.

There is apparently some doubt as to the accuracy of Blakely's taxonomic classification of the genus *Eucalyptus* (Gaub & Pryor, 1958, 1959).

The evidence of host-associations of the species of *Glycaspis* (*Glycaspis*) and *Glycaspis* (*Alloglycaspis*) outlined above, agrees with Gaub & Pryor's opinion that the taxonomic arrangement of the *Eucalyptus* spp. should differ from that of Blakely, in that the combined group Renantherae and Renantherae Normales (Section C) might well be constituted a subgenus. The psyllid-eucalypt host-association supports this view, as *Glycaspis* (*Glycaspis*) spp. occurring on hosts contained in that group constitute a clear evolutionary divergence from *Glycaspis* (*Alloglycaspis*) spp. occurring on eucalypts contained in Sections A, D and E. Such a host-sequence therefore is at variance with the eucalypt sequence in Blakely's classification.

TABLE 1.

Association of Lerps and Galls of *Glycaspis* spp. with *Eucalyptus* spp.

Subgenus *Glycaspis* (*Glycaspis*).

1. Galls:

- Series xxvi (*E. pilularis*).
 Ser. xxvii (*E. triantha*, *E. umbra*).
 Ser. xxix (*E. agglomerata*, *E. blaxlandi*).
 Ser. xxx (*E. stricta*, *E. sieberiana*).
 Ser. xxxii (*E. piperita*).
 Ser. xxxiii (*E. haemastoma*).

2. Flat Lerps:

- Ser. xxix (*E. sparsifolia*).
 Ser. xxxii (*E. piperita*, *E. radiata* var. *subplatyphylla*).

Subgenus *Glycaspis* (*Alloglycaspis*).

4. Round Lerps:

- Ser. vi (*E. saligna*, *E. propinqua*, *E. punctata*, *E. robusta*, *E. resinifera*).
 Ser. viii (*E. gomphocephala*).
 Ser. xi (*E. dumosa*).
 Ser. xv (*E. blakelyi*? or *E. dealbata*?, *E. amplifolia*, *E. umbellata*).
 Ser. xviii (*E. dunnii*).
 Ser. xxxvii (*E. bosistoana*? or *E. hemiphloia*?, *E. populifolia*).
 Ser. xxxviii (*E. paniculata*).

3. Round Lerps:

- Ser. xxvi (*E. pilularis*, *E. wardii**).
 Ser. xxvii (*E. triantha*, *E. umbra*).
 Ser. xxix (*E. eugenioides*? or *E. wilkinsoniana*?, *E. cameroni*, *E. caliginosa*).
 Ser. xxx (*E. stricta*, *E. sieberiana*).
 Ser. xxxii (*E. piperita*, *E. campanulata*, *E. radiata* var. *subplatyphylla*).
 Ser. xxxiii (*E. haemastoma*).

5. Oval Lerps:

- Ser. vi (*E. deanei*, *E. resinifera*).
 Ser. xv (*E. camaldulensis*, *E. blakelyi*).
 Ser. xxxvii (*E. populifolia*).
 Ser. xxxviii (*E. paniculata*).
 Ser. xxxix (*E. melliodora*).

6. Rectangular Lerps:

- Ser. vi (*E. grandis*, *E. saligna*, *E. botryoides*, *E. resinifera*, *E. robusta*).

* The single tree of this species from which *Glycaspis* adults were reared is near the Herbarium, in The Royal Botanic Gardens, Sydney, and is regarded as an F₂ hybrid.

Species of *Glycaspis* (*Glycaspis*) are considered to be the most primitive of the genus, and species of *Glycaspis* (*Alloglycaspis*) the most recent and specialized.

Within Section C, Blakely has placed Series xxvii (white mahoganies) and xxviii (tallow wood) between Series xxvi (blackbutts) and xxix (stringybarks). Should the evolutionary divergence found in *Glycaspis* (*Glycaspis*) spp. occurring on eucalypts contained in Section C be an indication of the evolution of this group of eucalypts, it appears that, from the evidence of morphological divergence in the psyllid species studied, Series xxvii should not separate Series xxvi from Series xxix *et seq.* in Section C.

From numerous inspections no *Glycaspis* spp. were found on *E. microcorys* F. Muell. (tallow wood). Gaub & Pryor suggest that *E. microcorys* is not correctly placed in Blakely's classification. No information on the possible association of *Glycaspis* spp. with *E. muelleriana* Howitt (yellow stringybark) in Series xxvi was obtained.

Further intensive collecting and rearing of *Glycaspis* (*Glycaspis*) and *Glycaspis* (*Alloglycaspis*) spp. from other *Eucalyptus* spp. hosts should clarify the general opinions given above.

Species of the psyllid genus *Lasiopsylla* Froggatt (1900), nymphs of which construct broad, flat, white lerps on foliage of ironbarks, and other psyllid genera occurring on the stems of various ironbarks, also occur on *E. populifolia* Hook. (bimble box), *E. behriana* F. Muell. (broad-leaved mallee box), *E. melliodora* A. Cunn. (yellow box), *E. rudderi* Maiden (Rudder's box) and *E. albens* Miq. (white box), thus supporting the currently-recognized close affinity between the eucalypt "ironbarks" and "boxes".

TABLE 2.

Associations of *Glycaspis* spp. Coverings with Hosts in Blakely's Series.

| Subgenus <i>Glycaspis</i> (<i>Glycaspis</i>). | | | | | | | | | |
|---|--------|------|-------|------|-----|-------|--------|---------|-------|
| 1. Galls: | Series | xxvi | xxvii | xxix | xxx | xxxii | xxxiii | | |
| 2. Flat Lerps: | Series | | | xxix | | xxxii | xxxiii | | |
| 3. Round Lerps: | Series | xxvi | xxvii | xxix | xxx | xxxii | xxxiii | | |
| Subgenus <i>Glycaspis</i> (<i>Alloglycaspis</i>). | | | | | | | | | |
| 4. Round Lerps: | Series | vi | viii | xi | xv | xviii | xxxvii | xxxviii | xxxix |
| 5. Oval Lerps: | Series | vi | | | xv | | xxxvii | xxxviii | |
| 6. Rectangular Lerps: | Series | vi | | | | | | | |

PREVIOUSLY DESCRIBED SPECIES.

Specimens of *Glycaspis eucalypti*? (Schwarz) 1898, which have not been examined by the writer, were apparently collected from *E. leucoxydon* F. Muell. (white ironbark). According to the concept presented above, this species would be placed in *Glycaspis* (*Alloglycaspis*), and is unlikely to be identical with that of Dobson's species, *Glycaspis eucalypti* from Hobart, Tasmania, as *E. leucoxydon* occurs only in South Australia, Victoria, and near the town of Barham on the Murray River, in New South Wales. No *Eucalyptus* spp. in Series xxxviii (ironbarks) or in any of the Series xxxiii to xlvi occur in Tasmania.

There is stunted growth of *E. viminalis* Labill. (ribbon-gum) occurring in the Domain at Hobart (Taylor, personal communication, 1959), where Dobson collected this species, and from which Taylor has bred species of *Glycaspis* (*Alloglycaspis*). From Dobson's paper it is reasonable to assume that he collected his material from that host-species. Should his type specimens exist, their location is unknown.

The type of *Glycaspis nigro-cincta* (Froggatt) 1903, which has been examined, was apparently collected from *E. coccifera* Hook. f. (Mount Wellington peppermint). *G. nigro-cincta* and its host agree with the natural morphological division, and host-group association, of the species now placed in *Glycaspis* (*Glycaspis*).

The hosts on which *G. eucalypti* (Froggatt) 1900 is stated to occur are *E. capitellata* Smith (brown stringybark), *E. piperita* Smith (Sydney peppermint), *E. leucoxydon*, *E. gracilis* F. Muell. (yorrell) and several other species. According to the host-association concept presented here, the one species of psyllid would not breed on each of these hosts. Froggatt's specimens from Deniliquin, N.S.W., which have been examined, correspond to species of *Glycaspis* (*Glycaspis*) and would not have been breeding on *E. leucoxydon* or *E. gracilis*. Also, because of host-distribution, they would not have been collected on *E. piperita*.

The lerps attributed to *G. hirsuta* (Froggatt) 1903, which have been examined, do not belong to any species of *Glycaspis* (*Glycaspis*) or *Glycaspis* (*Alloglycaspis*). The adult female type specimen which was examined, and which Froggatt collected on *E. robusta* Smith (swamp mahogany), is placed in *Glycaspis* (*Glycaspis*), which indicates that *G. hirsuta* does not breed on *E. robusta*.

A whole-mount slide of a co-type male of *G. granulata* (Froggatt) 1900 collected on *E. robusta* was examined. The distorted aedeagus of this specimen (fig. 46) was compared with those of specimens constructing rectangular lerps and bred by the writer from *E. robusta* occurring at Mona Vale and Wamberal, N.S.W. The structure of the claspers and aedeagus of the co-type is distinct from that of the species bred from *E. robusta*, but appears to correspond with that of the *Glycaspis* (*Alloglycaspis*) sp. constructing rectangular lerps and reared by the writer from *E. botryoides* Smith

(bangalay) from Kurnell, N.S.W. Hybrids of *E. robusta* and *E. botryoides* often occur and determination of these species and their hybrids is sometimes difficult.

G. occidentalis (Solomon) is placed in *Glycaspis* (*Alloglycaspis*).

G. flavilabris (Froggatt) 1903 is placed in *Glycaspis* (*Glycaspis*), and is now the type species of that subgenus.

G. mannifera (Froggatt) 1900 is placed in *Glycaspis* (*Alloglycaspis*). The type ♂, and a ♂ (not type), which have been examined, were apparently collected at Tumut, N.S.W., and the hosts given as *E. polyanthemos* Schauer (red box), *E. hemiphloia* F. Muell. (grey box) and *E. gracilis*. It appears that more than one species of *Glycaspis* were included in Froggatt's remarks, and it was not determined from which host his specimens were collected. If collected at Tumut, the most probable host among those referred to by him would be *E. polyanthemos*.

PROCEDURE FOR DESCRIPTIONS.

New species described in this paper are primarily grouped and arranged according to the number of rhinaria on the antennae, i.e., one on each of antennal segs 4 to 9 (galls); one on segs 4 to 6, 8 and 9 (flat, round and oval lerps); one on segs 4, 6, 8 and 9 (rectangular lerps). The first group is considered to be the most primitive, and the last group the most recent in evolutionary sequence.

The shapes of the coverings of nymphs are also considered of sufficient importance to be used as a basis for separation of the flat, round and oval lerp group, and are arranged in that sequence which is considered to be indicative of their evolutionary development.

Drawings were made with the aid of a graticule and squared paper, and were all drawn to the same magnification. All setae were drawn to scale.

Pinned specimens are usually unsatisfactory for description and the following species-descriptions are based on specimens in alcohol, unless otherwise stated.

Measurements and coloration of adults are apparently an arbitrary means of separating species, so that slides of dissected male claspers and aedeagus were necessary for examination and illustration.

Measurements given of the lengths of the genal processes are from their distal tips to the anterior edges of the antennal foveae.

The technique adopted for the preparation of slide material is explained in a typescript paper of The Ministry of Agriculture, Fisheries and Food, Great Britain; Conference of Advisory Entomologists: Occasional Notes No. 8.

All specimens hereafter referred to in this paper were collected from New South Wales, by the writer, unless otherwise stated.

Type material is distributed to the Institutions referred to by the following abbreviations: AM, The Australian Museum, Sydney; BM, The British Museum, (Natural History), London; CS, The Division of Entomology, C.S.I.R.O., Canberra; FC, The Forestry Commission of New South Wales.

DESCRIPTIONS.

(A) Subgenus GLYCASPIS (GLYCASPIS).

Type Species: Glycaspis (Glycaspis) flavilabris (Froggatt) (designated Taylor 1960) (= *Aphalara flavilabris* Froggatt 1903 = *Spondylaspis flavilabris* Tuthill & Taylor 1955).

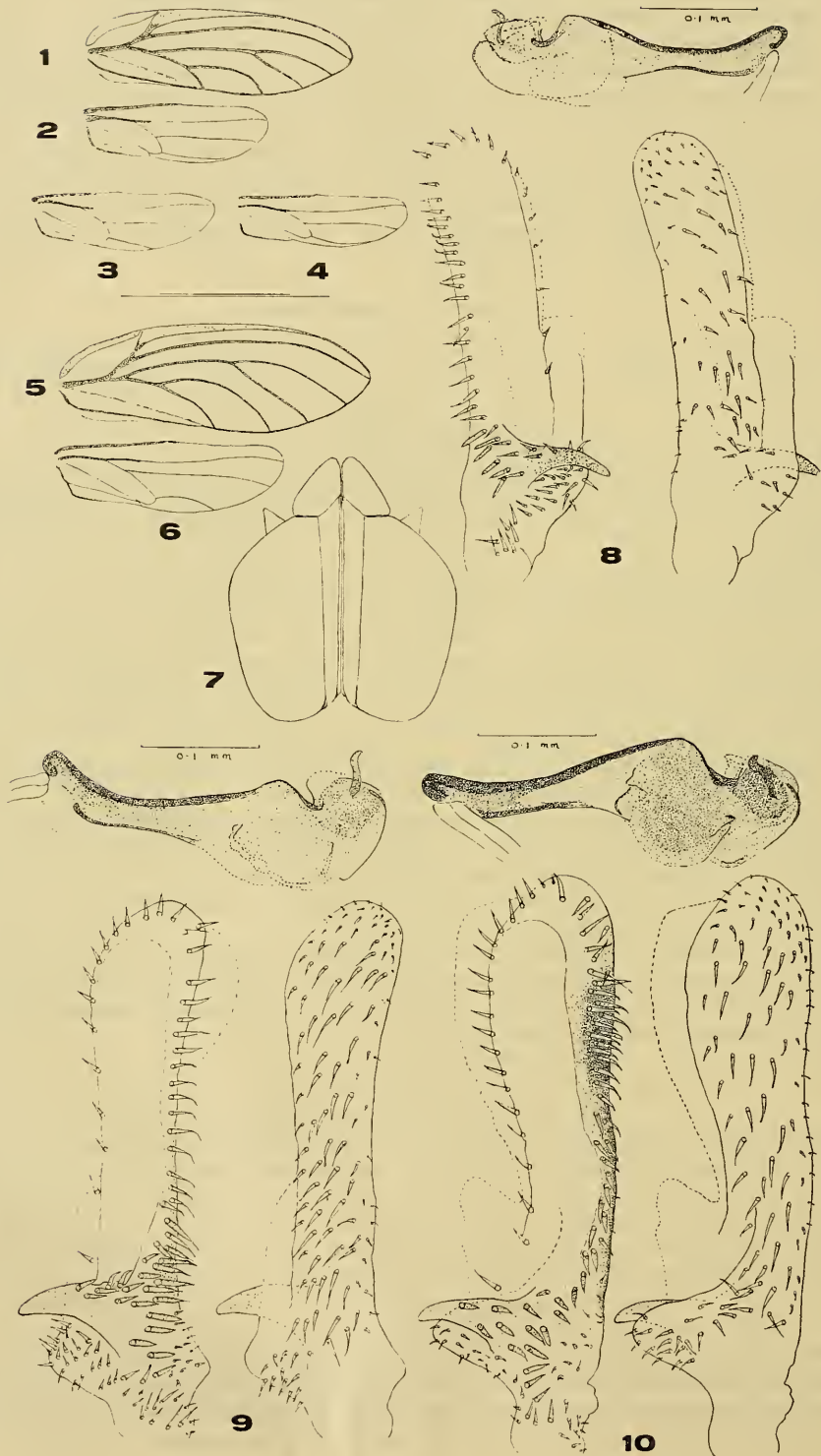
Type Locality: Rylstone, New South Wales.

There is no host-plant recorded for this species, and it is here assumed to be one of the *Eucalyptus* spp. contained in Blakely's Section C.

GALL-FORMERS.

This group is considered to be the most primitive of the genus because of the presence of a single rhinarium at the distal end of antennal segments 4 to 9 inclusive.

General coloration of adults of all the gall-forming species examined is pale to bright green, suffused pale yellow, with the male genitalia orange.



GLYCASPIS (GLYCASPIS) AMPLIFICATA, sp. nov.

(*L. amplificatus* = enlarged. Referring to the enlarged leaf-tissues forming the galls.)

General colour: lemon-yellow.

Male: Head: width 0.68 mm.; vertex: along suture 0.24 mm., width 0.42 mm.; genal processes: length 0.27 mm.; antennae: length 1.63 mm., pale brown, darkening to distal end with segs 9 and 10 black. Pronotum: width 0.57 mm. Genitalia: pale orange, with lower plate paler in colour; claspers and aedeagus as in Text-fig. 8. Length of aedeagus: (1 specimen) 0.274 mm. Forewings: length 2.83 mm., pterostigma and base of costa translucent, venation pale to dark brown, darkest towards base of wing, tegulae marked brown. Hindwing: Cu_1 as in Text-fig. 6.

Host-plant: *Eucalyptus triantha* Link. (white mahogany).

Type Locality: Ourimbah State Forest, Section 1, Compartment 17 (Newcastle Forestry District, Wyong sub-district).

Type: Holotype male on slide labelled "Ourimbah S.F. 24 ii 1960, K. M. Moore. From *E. triantha*". Slide deposited with AM.

Notes: Galls: Green, smaller and similar to, but not as elongate as, those occurring on *E. haemastoma* (Pl. vi, fig. 1).

GLYCASPIS (GLYCASPIS) INCLUSA, sp. nov.

(*L. inclusus* = confined, shut in. Referring to the confinement of the nymph within the gall.)

General colour: lemon-yellow.

Male: Head: width 0.93 mm.; vertex: along suture 0.32 mm., width 0.59 mm.; genal processes: length 0.37 mm.; antennae: length 2.34 mm., segs 1 to 8 pale grey-brown, segs 9 and 10 dark brown. Pronotum: width 0.75 mm. Genitalia: orange; claspers and aedeagus as in Text-fig. 9. Length of aedeagus: (1 specimen) 0.311 mm. Forewings: length 3.66 mm., pterostigma and base of costa lightly suffused white. No brown or black on tegulae. Hindwings: Cu_1 as in Text-fig. 6.

Female: Coloration similar to male. Slightly larger.

Host-plant: *Eucalyptus umbra* R. T. Baker (bastard mahogany).

Type Locality: Mangrove Mountain, $7\frac{1}{2}$ miles along Spencer Road, south from Central Mangrove Mountain.

Types: Holotype male, allotype female, on slide labelled "Mangrove Mountain, N.S.W. 3 iv 1960, K. M. Moore. From *E. umbra*". Slide deposited with AM.

Notes: Galls: Green.

GLYCASPIS (GLYCASPIS) CYTOS, sp. nov.

(*Gk. kytos* = a hollow vessel. Referring to the gall.)

General colour: green and yellow.

Male: Head: width 0.88 mm.; vertex: along suture 0.37 mm., width 0.51 mm., strongly concave to foveae and convex along median suture; genal processes: length 0.34 mm.; antennae: missing (see female). Pronotum: width 0.71 mm. Genitalia: colour not apparent; claspers orange distally; claspers and aedeagus as in Text-fig. 10.

Text-fig. 1.—Forewing venation of *Glycaspis* (*Alloglycaspis*) showing length of M + Cu stem.

Text-figs 2, 3 and 4.—Hindwing venation of *Glycaspis* (*Alloglycaspis*) showing variation in shape of Cu_1 .

Text-fig. 5.—Forewing venation of *Glycaspis* (*Glycaspis*) showing length of M + Cu stem.

Text-fig. 6.—Hindwing venation of *Glycaspis* (*Glycaspis*) showing shape of Cu_1 .

Text-fig. 7.—Ventral aspect of meta-coxae of *Glycaspis* (*Glycaspis*) showing anterior spines.

Text-fig. 8.—Aedeagus and claspers (left, internal face; right, external face) of *Glycaspis amplificata*, sp. nov.

Text-fig. 9.—Aedeagus and claspers of *Glycaspis inclusa*, sp. nov.

Text-fig. 10.—Aedeagus and claspers of *Glycaspis cytos*, sp. nov.

Length of aedeagus: (1 specimen) 0.403 mm. Forewings: length 3.93 mm., suffused yellow below RS. Hindwings: Cu_1 as in Text-fig. 6.

Female: Coloration as for the male, but wings suffused deeper yellow. Antennae: length 2.56 mm., segs 1 to 3 pale brown, segs 4 and 5 dark brown, segs 6 to 10 black.

Host-plant: *Eucalyptus pilularis* Smith (blackbutt).

Type Locality: Kincumber, N.S.W., 1¼ miles along Killcare Road, south from Kincumber.

Types: Holotype male, allotype female, on slide labelled "Kincumber, N.S.W. 22 vii 1958, K. M. Moore. From *E. pilularis*". Slide deposited with AM. Paratypes: Pinned: Kincumber, N.S.W. 22 vii 1958, K. M. Moore; 3 females to AM.

Notes: Galls: Spherical; either red or pink, and partly yellow or green.

GLYCASPIS (GLYCASPIS) ENCYSTIS, sp. nov.

(Gk. *en* = in; *kystis* = a pouch. Referring to the occurrence of the nymph within the gall.)

General colour: bright green, or yellow.

Male: Head: width 0.90 mm.; vertex: along suture 0.39 mm., width 0.49 mm., yellow; genal processes: length 0.34 mm., yellow-green; antennae: length 2.20 mm., brown, with seg. 8 distally and segs 9 and 10 black. Pronotum: width 0.68 mm., yellow-green. Prescutum: yellow-green. Scutum: yellow-green. Abdomen: bright green. Genitalia: orange; claspers and aedeagus as in Text-fig. 11. Length of aedeagus: (3 specimens) 0.295 mm., 0.317 mm., 0.320 mm. Forewings: length 3.71 mm., suffused pale yellow along posterior margin, venation orange-brown. Hindwings: Cu_1 as in Text-fig. 6.

Female: Colour as for the male, but forewings suffused yellow on posterior half.

Host-plant: *Eucalyptus agglomerata* Maiden (blue-leaved stringybark).

Type Locality: Ourimbah S.F., Section 1, Compartment 17.

Types: Holotype male on slide labelled "Ourimbah S.F. 22 xi 1959, K. M. Moore. From *E. agglomerata*". Slide deposited with AM. Paratypes: 2 slides: Ourimbah S.F. 22 xi 1959, K. M. Moore; to AM. In alcohol: Ourimbah S.F. 24 ii 1960, K. M. Moore; 3 adults to AM. Pinned: Yarramalong, N.S.W. 21 ii 1960, K. M. Moore; 2 males to AM.

Notes: Galls: Green, more or less spherical but asymmetrical, glaucous and of similar colour to that of the host-plant foliage; rather brittle and thin-walled. This is the largest of the gall-forming species yet reared.

GLYCASPIS (GLYCASPIS) CYRTOMA, sp. nov.

(Gr. *kyrtoma* = a swelling. Referring to the gall.)

General colour: yellow, faintly marked with black.

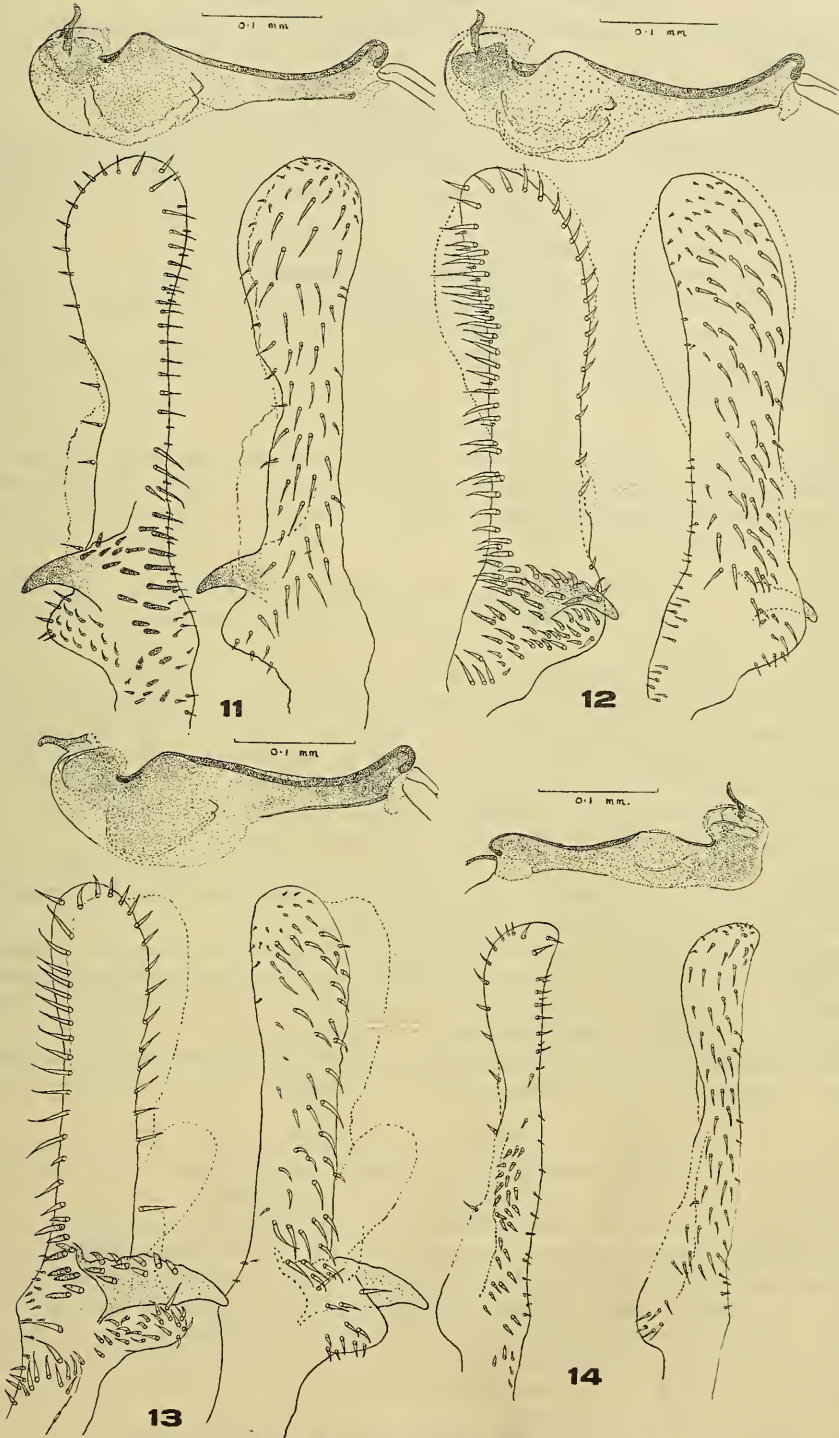
Male: Head: width 0.81 mm.; vertex: along suture 0.27 mm., width 0.44 mm., yellow, median suture and lateral borders faintly brownish; genal processes: length 0.27 mm.; antennae: length 1.83 mm., pale brown, seg. 9 apically and seg. 10 black. Pronotum: width 0.66 mm., dark marks at bases of prominences and indistinctly on posterior border. Prescutum: posterior border narrowly black. Scutum: diffused pale brown longitudinal lines from postero-lateral corners of prescutum to antero-lateral corners of scutellum. Scutellum with antero-lateral corners narrowly marked with black. Metanotum: posterior border narrowly marked with black. Abdomen: very narrow transverse black lines on segs 1 to 5, paler and smaller toward posterior segments, indistinct on seg. 5. Genitalia: upper plate orange, lower plate pale orange; claspers and aedeagus as in Text-fig. 12. Length of aedeagus: (1 specimen) 0.315 mm. Forewings: length 3.66 mm., pterostigma and base of costa slightly opaque, tegulae marked with brown and black. Hindwings: Cu_1 as in Text-fig. 6.

Host-plant: *Eucalyptus piperita* Smith (Sydney peppermint).

Type Locality: Olney East S.F. On boundary of Compartments 13 & 14 McKenzie's Road (Newcastle Forestry District; Wyong Subdistrict).

Type: Holotype male on slide labelled "Olney East S.F. 3 v 1960, K. M. Moore. From *E. piperita*". Slide deposited with AM.

Notes: Galls: Green, or green and red, usually more or less spherical.



Text-fig. 11.—Aedeagus and claspers of *Glycaspis encystis*, sp. nov.

Text-fig. 12.—Aedeagus and claspers of *Glycaspis cyrtoma*, sp. nov.

Text-fig. 13.—Aedeagus and claspers of *Glycaspis perthecata*, sp. nov.

Text-fig. 14.—Aedeagus and claspers of *Glycaspis phreatos*, sp. nov.

GLYCASPIS (GLYCASPIS) PERTHECATA, sp. nov.

(*L. perthecatus* = well-sheathed. Referring to the thick walls of the galls of this species.)

General colour: green to yellow-green; male genitalia orange.

No measurements were made before the specimen was placed on a slide.

Adults of this species are indistinguishable from most of the other gall-formers, unless a slide of the male genitalia is examined. Claspers and aedeagus as in Text-fig. 13. Length of aedeagus (1 specimen) 0.311 mm. Forewings: length 3.56 mm. Hindwings: Cu_1 as in Text-fig. 6.

Host-plant: *Eucalyptus haemastoma* Smith (scribbly gum).

Type Locality: Ourimbah S.F., Section 4, Compartment 4.

Type: Holotype male on slide labelled "Ourimbah S.F. 14 viii 1960, K. M. Moore. From *E. haemastoma*". Slide deposited with AM.

Notes: Galls: (Pl. vi, fig. 1.) Elongate, singly or in a row along surface of leaf; green, often with some red.

FLAT LERPS.

The two species examined, belonging to this group, bear a single rhinarium at the distal end of each of antennal segs 4 to 6, 8 and 9; this, together with their general habits, suggests that their evolutionary position is between the gall-formers and those constructing round lerps.

GLYCASPIS (GLYCASPIS) PHREATOS, sp. nov.

(*Gr. phrear* = a pit. Referring to the depression in the leaf-surface, caused by the nymph.)

General colour: (Pinned specimen) pale yellow, pale green, or lemon.

Adults were not described prior to slides being made, but the species is readily separable from the other known species constructing flat lerps by the structure of the male claspers and aedeagus (Text-fig. 14). Length of aedeagus: (3 specimens) 0.236 mm., 0.239 mm., 0.250 mm. Forewings: length 2.54 mm. Hindwings: Cu_1 as in Text-fig. 6.

Host-plant: *Eucalyptus sparsifolia* Blakely (narrow-leaved stringy-bark).

Type locality: Wentworth Falls, N.S.W. ($\frac{1}{2}$ mile north of township).

Types: Holotype male, and nymphs, on slide labelled "Wentworth Falls, N.S.W. 3 i 1959, K. M. Moore. From *E. sparsifolia*". Slide deposited with AM. Paratypes: 5 slides, Wentworth Falls, N.S.W., 3 i 1959; 4 to AM, 1 to CS.

Notes: Lerps usually occur singly, but there may be two or more on a young leaf. Some leaves become curled. Lerps are attached around their perimeters, to the leaf-surface, and are slightly sweet to the taste. No filaments occurred on any of the numerous lerps of this species examined.

When nymphs are parasitized, additional excretion is placed around the enclosed nymph, thus more firmly attaching it to the leaf-surface.

GLYCASPIS (GLYCASPIS) PLANARIA, sp. nov.

(*L. planarius* = flat. Referring to the comparatively flat lerps of this species.)

General colour: (Pinned specimen) yellow, suffused green.

Male: Head: width 0.63 mm.; vertex: along suture 0.22 mm., width 0.34, yellow suffused orange; genal processes: length 0.32 mm., pale green, darker distally; antennae: length 1.22 mm., pale brown with segs 9 and 10 black. Pronotum: width 0.44 mm., yellow. Scutum: yellow. Metanotum: yellow. Genitalia: upper plate pale orange, lower plate yellow suffused green; claspers and aedeagus as in Text-fig. 15. Length of aedeagus: (1 specimen) 0.245 mm. Forewings: length 2.51 mm., venation yellow-brown. Hindwings: Cu_1 as in Text-fig. 6.

Host-plant: *Eucalyptus piperita*.

Type Locality: Wentworth Falls, N.S.W. ($\frac{1}{4}$ mile north of township).

Type: Holotype male on slide labelled "Wentworth Falls, N.S.W. 2 i 1960, K. M. Moore. From *E. piperita*". Slide deposited with AM.

ROUND LERPS.

Species constructing round lerps bear a single rhinarium on each of antennal segments 4 to 6, 8 and 9, as do those species constructing flat lerps, or oval lerps.

GLYCASPIS (GLYCASPIS) MACTANS, sp. nov.

(*L. mactans* = afflicting. Referring to the affliction of trees by this species.)

General colour: pale brown, yellow-brown or dark brown, with red on scutum and abdomen, dorsally. Wings clear, to golden colour.

Male: Head: width 0.59 mm.; vertex: along suture 0.24 mm., width 0.32 mm., pale brown, narrowly edged black; suture black; genal processes: length 0.27 mm., pale brown, upturned distally; antennae: length 1.80 mm., segs 1 to 5 pale brown, 6 to 8 dark brown, 9 and 10 black. Pronotum: width 0.49 mm., pale brown, anterior border and posterior border near prominences, narrowly black. Prescutum: pale brown, narrowly edged black. Scutum: pale yellow-brown, narrowly edged black, two red to brown longitudinal stripes each side of median area. Scutellum and metascutellum yellow-brown, with area between yellow-brown, and paler laterally. Metanotum: yellow-brown, narrowly edged black. Abdomen: yellow-brown with central area red; narrow, black transverse lines on segs 2 to 5. Genitalia: pale brown; upper plate with base narrowly black; claspers and aedeagus as in Text-fig. 16. Length of aedeagus: (25 specimens) Extremes, 0.173 mm. to 0.193 mm., but generally smaller from highlands (extremes, 0.158 mm. to 0.182 mm. from Cloud's Creek S.F.). Forewings: length 2.34 mm., pale honey-colour. Hindwings: Cu_1 as in Text-fig. 6. Whole adult may be suffused red. Ventral: abdominal segments suffused pale to dark grey, and usually a dark area on each metacoxa.

Female: Coloration similar to male, but darker. Abdomen sometimes suffused dark grey or black, ventrally. Wings of deeper honey-colour than on the male. Transverse lines on abdomen often surrounded by an extensive grey to black area.

Host-plants: *E. triantha* and *E. umbra*.

Type Locality: Lisarow, N.S.W., 1½ miles from level-crossing, along Cut Rock Road.

Types: Holotype male, allotype female, on slide labelled "Lisarow, N.S.W. 31 vii 1958, K. M. Moore. From *E. triantha*". Slide deposited with AM. Paratypes: From *E. triantha*. 10 slides: Lisarow, 31 vii 1958; 6 to AM, 1 to BM, 1 to CS, 2 to FC. 5 slides: Cloud's Creek S.F., 3 v 1959; 4 to AM, 1 to FC. From *E. umbra*. 5 slides: Ourimbah S.F., 6 vii 1960; 4 to AM, 1 to FC. 4 slides: Ourimbah S.F., 21 v 1958; 3 to AM, 1 to FC. 3 slides: Wyong S.F., 17 xii 1958; 2 to AM, 1 to FC. In alcohol: From *E. triantha*. Lisarow, 31 vii 1958; 100 adults to AM. Cloud's Creek S.F., 3 v 1959; 50 adults, and nymphs, to AM. Ourimbah S.F., 20 xi 1958; 100 adults to CS. Kincumber. 23 iii 1959; 15 adults to FC. From *E. umbra*. Ourimbah S.F., 23 viii 1960; 60 adults to AM. Ourimbah S.F., 6 vii 1960; 100 adults to CS. Wyong S.F., 12 viii 1958; 75 adults, and nymphs, to AM. Wyong S.F., 14 v 1959; 50 adults to FC. Pinned: From *E. triantha*. Lisarow, 11 ix 1958; 5 males, 4 females, to AM. Cloud's Creek S.F., 13 x 1958, G. Baur; 2 males, 2 females, to AM. Ourimbah S.F., 23 vii 1957; 5 males, 2 females, to AM. Ourimbah S.F., 14 xi 1958; 7 males, 10 females, to AM. Ourimbah S.F., 14 xi 1958; 8 males, 12 females, to CS. From *E. umbra*. Wyong S.F., 12 viii 1958; 3 males, 4 females to AM. Kincumber, 12 ix 1958; 1 female to AM.

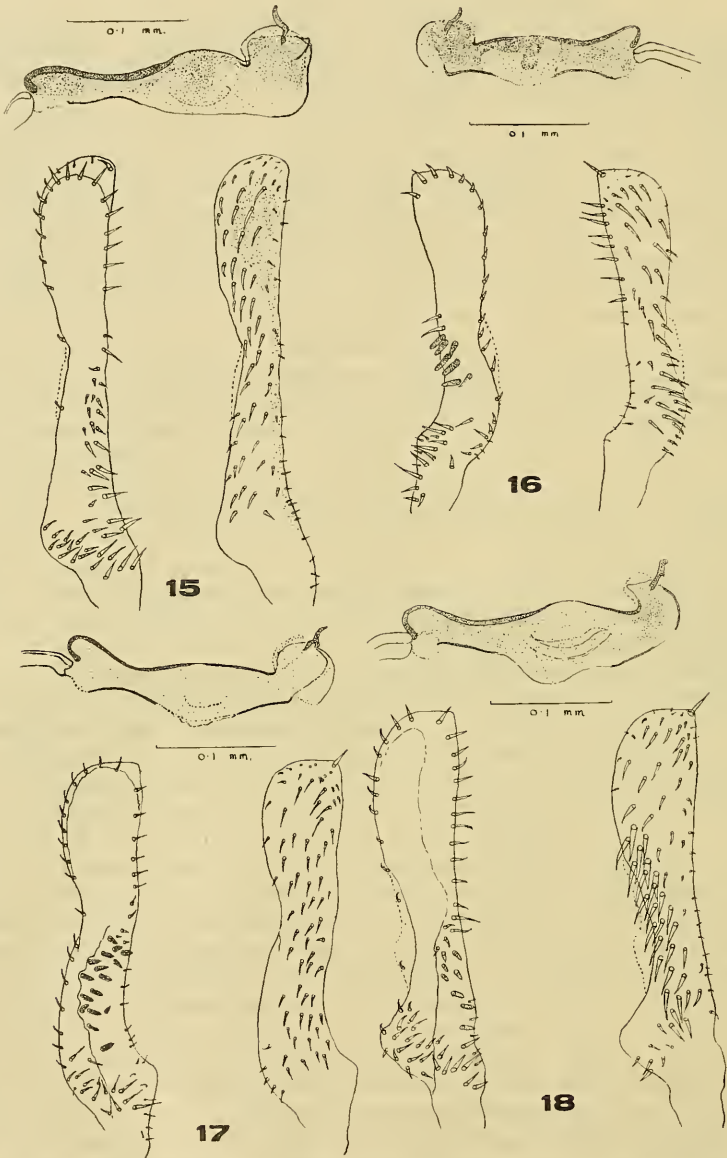
Notes: Specimens which may occur on the above two hosts cannot at present be separated, and are retained as a single species. Eggs: Between 30% and 40% of the eggs occurring on *E. triantha* are oviposited along the edges of the leaves; the remainder may be oviposited anywhere on the leaf-surfaces, usually singly and rarely contiguous. Lerps: Lerps are peaked, and are 3 mm. to 4 mm. in diameter; they may be yellow, but are usually white, and may bear numerous fine filaments on the external surface; they occur on either side of the leaves.

GLYCASPIS (GLYCASPIS) ORIENTALIS, sp. nov.

(*L. oriens* = the east; *L. alis* = pertaining to. Referring to the occurrence of this species in the eastern portion of the continent.)

To reduce confusion with *G. mactans*, because of similarity in the extremes of coloration of the males, a more detailed description of the female is given.

General colour: dark brown or dark red-brown.



Text-fig. 15.—Aedeagus and claspers of *Glycaspis planaria*, sp. nov.

Text-fig. 16.—Aedeagus and claspers of *Glycaspis mactans*, sp. nov.

Text-fig. 17.—Aedeagus and claspers of *Glycaspis orientalis*, sp. nov.

Text-fig. 18.—Aedeagus and claspers of *Glycaspis seriata*, sp. nov.

Male: Paler in coloration, and generally smaller, than female. Head: width 0.63 mm.; vertex: along suture 0.37 mm.; genal processes: length 0.34 mm.; antennae: length 1.80 mm. Pronotum: width 0.51 mm. Genitalia: claspers and aedeagus as in Text-fig. 17. Length of aedeagus: (7 specimens) Extremes, 0.225 mm. to 0.230 mm. Forewings: length 2.49 mm., faintly suffused grey. Hindwings: Cu, as in Text-fig. 6.

Female: Head: width 0.66 mm.; vertex: along suture 0.39 mm., creamy brown, sometimes suffused grey, narrowly edged black; suture black; genal processes: length 0.32 mm., red-brown, suffused grey towards distal end, tapering strongly to distal end; antennae: length 2.04 mm., brown, with seg. 7 black apically and segs 8 to 10 black. Pronotum: width 0.59 mm., colour as for vertex, with prominences palest; two depressions, and narrow areas surrounding depressions, grey to black. Prescutum: red-brown, sometimes suffused grey, narrowly edged black. Scutum: as prescutum but sometimes with two dorsal longitudinal red, grey or brown lines each side. Scutellum and metascutellum red-brown, sometimes suffused grey; area between, pale yellow-brown, dark red-brown laterally. Post-metanotum: yellow-brown, with markings and borders grey to black. Abdomen: seg. 1 with anterior and posterior borders narrowly, dark brown, suffused red; remainder red dorsally, with narrow, transverse black lines on grey-brown areas on segs 2 to 5. Forewings: length 3.07 mm., more elongate than those of *G. mactans*; golden-brown to red-brown, suffused light to dark grey posterior to SC or RS, darkest toward apex; venation red on apical half, brown on basal half. Ventral: genal processes edged black posteriorly; area between bases dark brown. Mesosternum dark brown, suffused red. Legs pale cream suffused grey, with posterior femora dark grey. Abdominal segments grey to dark brown.

Host-plant: *E. umbra*.

Type Locality: Somersby, N.S.W., 4½ miles along Dog Trap Road from the Pacific Highway at Ourimbah.

Types: Holotype male, and nymphs, on slide labelled "Somersby, N.S.W. 18 viii 1958, K. M. Moore. From *E. umbra*". Slide deposited with AM. Paratypes: 8 slides: Somersby, 18 viii 1958; 6 to AM, 1 to BM, 1 to CS. 7 slides: Kincumber, 23 iii 1959; 6 to AM, 1 to FC. In alcohol: Somersby, 18 viii 1958; 8 adults, and nymphs, to AM. Kincumber, 23 iii 1959; 25 adults, and nymphs, to AM. Pinned: Somersby, 18 viii 1958; 5 males, 4 females, to AM, 4 males, 5 females, to CS. Kincumber, 12 ix 1958; 3 females to AM.

Notes: This species is separable from *G. mactans* by the longer and narrower wings, the dark grey suffusion on the wings of the females, and the aedeagus and claspers of the males. Lerps of this species are not as peaked as those of *G. mactans*.

GLYCASPIS (GLYCASPIS) SERIATA, SP. NOV.

(*L. seriatus* = arranged in rows. Referring to the tendency of nymphs to be disposed in a row, along the venation of a leaf.)

General colour: yellow to orange, suffused red and lightly marked with black.

Male: Head: width 0.78 mm.; vertex: along suture 0.27 mm., width 0.42 mm., pale yellow, bordered narrowly with black; suture and foveae grey to black; genal processes: length 0.29 mm., cream, sometimes faintly suffused grey; antennae: length 1.66 mm., suffused brown, darkening to distal end with segs 9 and 10 black. Pronotum: width 0.59 mm., lateral prominences cream, with black at bases; medio-dorsal area cream, remainder orange. Small depressions half-way between median line and lateral borders, faintly grey. Prescutum: pale yellow, suffused orange anteriorly, narrowly edged black. Scutum: yellow, faintly edged black on posterior border; two more or less parallel longitudinal red to brown stripes each side of broad median area. Metanotum, scutellum and metascutellum, narrowly marked black, anterior borders and area between, yellow. Area postero-lateral to scutellum, suffused red. Post-metanotum: yellow, narrowly bordered grey to black. Abdomen: medio-dorsal area red, bordered pale brown laterally. A narrow black transverse central line on segs 2 to 5 or 6. Genitalia: upper plate suffused grey-brown, darkest at base; lower plate cream, with upper anterior angle grey; claspers suffused grey; claspers and aedeagus as in Text-fig. 18. Length of aedeagus: (19 specimens) Extremes 0.216 mm. to 0.250 mm. Forewings: Length 2.71 mm., venation pale brown and costal margin black; pterostigma and base of costa suffused white. Hindwings: Cu, as in Text-fig. 6. Legs: femora, tibiae and tarsi suffused grey.

Female: Deeper orange, dark marks more intense and extensive than on the male; genal processes tapered to distal end; red on abdomen bordered grey laterally.

Genitalia: prominences of upper plate pale brown. Ventral: May be marked with grey, except longitudinal median area on each segment and genital plate; dark areas variable in extent; sometimes dark lateral area on meta-coxae; mesosternum sometimes suffused grey.

Host-plants: *E. pilularis* and *E. wardii* Blakely (Ward's stringybark). The tree of *E. wardii* from which the adults were reared is near the herbarium, in The Royal Botanic Gardens, Sydney, and is apparently an F_2 hybrid.

Type Locality: Ourimbah S.F., No. 3 extension, near Wyong Creek Road entrance gate.

Types: Holotype male, allotype female, nymphs, on slide labelled "Ourimbah S.F., 29 ix 1958, K. M. Moore. From *E. pilularis*". Slide deposited with AM. Paratypes: From *E. pilularis*. 3 slides: Ourimbah S.F., 29 ix 1958; 1 to AM, 1 to BM, 1 to CS. 5 slides: Sylvania, 5 xii 1958; to AM. 5 slides: Kincumber, 27 xi 1958; 4 to AM, 1 to FC. From *E. wardii*. 5 slides: The Royal Botanic Gardens, Sydney, 9 x 1958; 4 to AM, 1 to FC. In alcohol: From *E. pilularis*. Ourimbah S.F., 29 ix 1958; 14 adults to AM. Kincumber, 27 xi 1958; 80 adults to AM. Pennant Hills, 1 viii 1958, K. G. Campbell; 17 adults to CS. Sylvania, 5 xii 1958; 11 adults to FC. Pinned: From *E. pilularis*. Sylvania, 5 xii 1958; 2 males, 2 females, to AM; 2 males, 3 females, to CS. Kincumber, 22 vii 1958; 2 males, 2 females, to AM; 1 male, 3 females, to CS. From *E. wardii*. Roy. Botanic Gdns. Sydney, 9 x 1958; 1 male, 1 female, to AM; 1 male, 1 female, to CS.

Notes: Eggs: Orange in colour. In groups, of up to 100, often near tip or edges of leaves; usually on upper leaf-surface. When there is a large population of adults, eggs may be laid in groups of up to 300. Lerps: White or yellow; up to 200 on a leaf when adults in large numbers; in close proximity within the group when at tips of leaves, but usually scattered along surface of leaf, near edges, or along primary or secondary veins, on either side of leaf; sometimes with filaments.

GLYCASPIS (GLYCASPIS) CONFLECTA, SP. NOV.

(N.L. *conflectus* = crowded, thickly clustered. Referring to the disposition of lerps of this species.)

General colour: orange, prominently marked with brown and black.

Male: Head: width 0.73 mm.; vertex: along suture 0.27 mm., width 0.39 mm.. yellow, prominently bordered with black which extends on to post-occipital sclerites; suture and foveae black; genal processes: length 0.32 mm., pale brown, suffused black; antennae: length 1.51 mm., dark brown, darkening distally, with segs 7 to 10 black. Pronotum: width 0.54 mm., orange, with prominences and median area cream; anterior edge prominently marked with black. Bases of prominences and small depressions half-way between median line and lateral borders, black. Prescutum: yellow, sometimes suffused grey, prominently edged with black; posterior edges of lateral ridges, and small adjacent sclerite marked with black. Scutum: yellow, narrowly bordered black, two broad orange-red to brown longitudinal bands each side of median area. Scutellum, metascutellum and area between, pale orange which may be suffused grey. Area postero-lateral to scutellum, orange suffused grey. Post-metanotum orange, marked with black. Abdomen: segs 1 and 2 with anterior edges narrowly brown to black, seg. 1 orange, suffused red. Remainder red dorsally. Narrow black transverse central lines on segs 2 to 5 and sometimes on seg. 6. Genitalia: upper plate brown, suffused grey; lower plate suffused grey; claspers and aedeagus as in Text-fig. 19. Length of aedeagus: (9 specimens) Extremes 0.239 mm. to 0.263 mm. Forewings: length 2.59 mm. Hindwings: Cu₁ as in Text-fig. 6. Ventral: Mesosternum, metacoxae and abdomen brown to black. Metacoxae with dark lateral spot. All femora, coxae, tibiae and tarsi suffused brown to black. Abdomen with pale, narrow median line. All pleurites marked brown to black.

Female: As for the male, but dark markings very pronounced and more extensive, particularly dorsal and ventral aspects of abdomen.

Host-plants: (a) *E. eugenioides* Sieb. (white stringybark) or (b) *E. wilkinsoniana* R. T. Baker (small-leaved stringybark); *E. cameroni* Blakely and McKie (diehard stringybark). (a) and (b) are of uncertain identification.

Type Locality: Kurrajong, N.S.W. Bell-bird Corner, on the Bell Road to Kurrajong Heights.

Types: Holotype male, allotype female, on slide labelled "Kurrajong, N.S.W. 31 vii 1959, K. M. Moore". Reared from host-plant (*a*) or (*b*). Slide deposited with AM. Paratypes: From (*a*) or (*b*). 8 slides: Kurrajong, 31 vii 1959; 6 to AM, 1 to BM, 1 to CS. From *E. cameroni*. 7 slides: Cloud's Ck. S.F., 6 v 1959; to AM. In alcohol: From (*a*) or (*b*). Kurrajong, 31 vii 1959; 60 adults, and nymphs to AM. From *E. cameroni*. Cloud's Ck. S.F., 6 v 1959; 30 adults to AM.

Material Examined: From (*a*) or (*b*); 4 slides (6 males, 1 female, and nymphs), Mona Vale, 24 ix 1958. (In collection of FC.)

Notes: Eggs: Contiguous, in groups, often near edges of leaves, on either surface. Occur singly, on edge of leaf, on *E. cameroni*. Nymphs: Bright orange. Lerps: Often situated along veins of leaf, on upper or lower leaf surfaces; contiguous when large.

The specimens from Kurrajong and Cloud's Ck. S.F. are at present considered to be the same species.

GLYCASPIS (GLYCASPIS) CONSERTA, sp. nov.

(*L. consertus* = connected, joined. Referring to the disposition of most of the lerps of this species.)

General colour: yellow, often suffused with red, and marked with brown and black.

Male: Head: width 0.73 mm.; vertex: along suture 0.24 mm., width 0.42 mm., pale yellow, narrowly bordered with black, darkest on posterior border of vertex and on post-occipital sclerites; foveae brown, suture black; vertex may be all suffused red; genal processes: length 0.29 mm., cream, and may be suffused pale brown, darkest laterally near apices; antennae: length 1.39 mm., two basal segs suffused dark grey, segs 3 to 6 pale brown, 7 and 8 dark brown, 9 and 10 black. Pronotum: width 0.54 mm., pale cream central area and on prominences, remainder suffused red, with depressions brown, and bases of prominences marked with black. Prescutum: cream, suffused red anteriorly; narrow median line, cream; narrowly bordered black, darker posteriorly, and with apex black. Scutum: cream, suffused red, with two reddish wavy lines each side; black each side of scutellum. Scutellum and metascutellum cream with anterior sutures edged black; area between, suffused red, with a red spot, suffused brown each side and narrowly bordered grey to black. Post-metanotum: cream, narrowly edged brown to black, with central cream square area bordered brown to black; central area palest. Abdomen: reddish-orange; lateral borders cream suffused grey. Seg. 1 with pale to dark grey anterior and posterior borders, segs 2 to 5 with narrow black transverse line on a wide grey to black area. Genitalia: brown suffused grey, darkest at base; lower plate with anterior corner and dorsal edge sometimes grey; claspers and aedeagus as in Text-fig. 20. Length of aedeagus: (12 specimens) Extremes 0.267 mm. to 0.284 mm. Forewings: length 2.83 mm., tinged grey on pinned specimens; tegulae grey-brown. Hindwings: Cu, as in Text-fig. 6. Ventral: Gular area and mesosternum pale brown. Femora, tibiae and tarsi suffused pale brown.

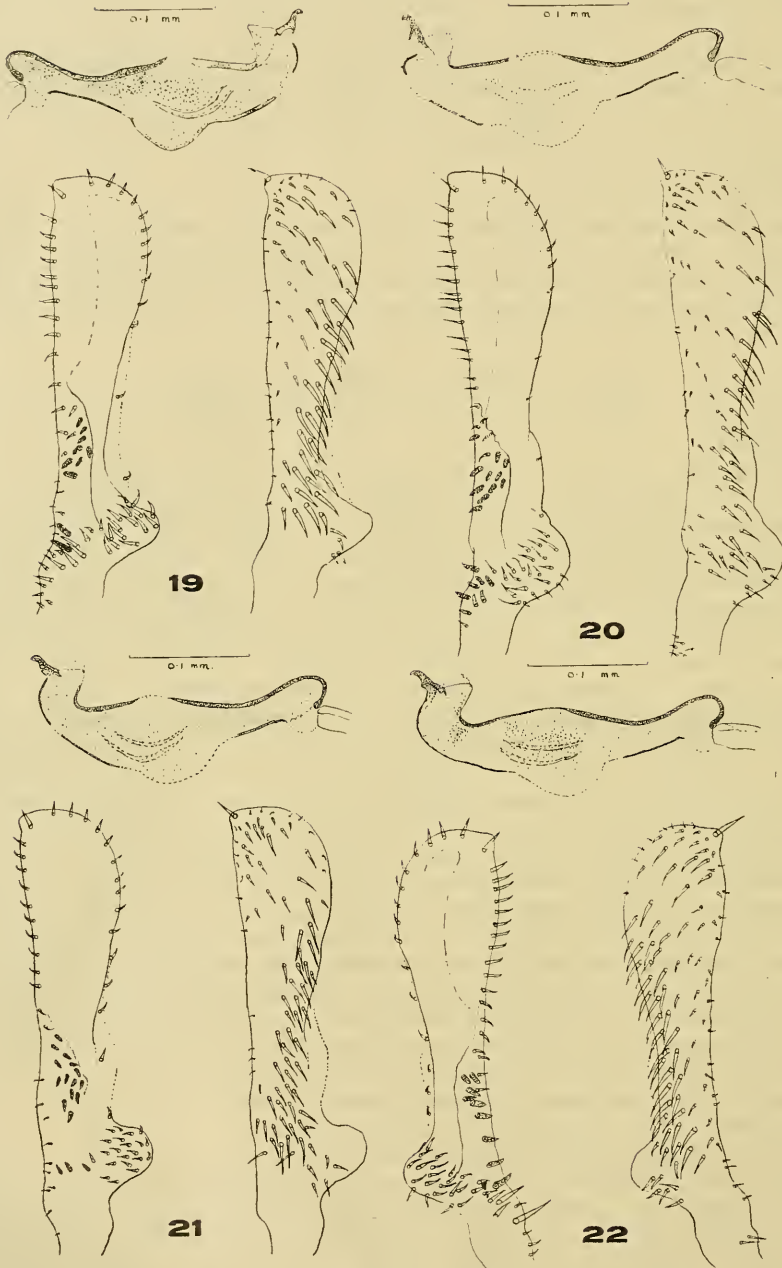
Female: Darker than male. Occipital sclerites posteriorly grey to black. Genal processes cream to pale brown, dark grey distally.

Host-plant: *E. sieberiana* F. Muell. (mountain ash).

Type Locality: Somersby, N.S.W., 5½ miles along Dog Trap Road from Pacific Highway at Ourimbah. *Types:* Holotype male, allotype female, nymphs, on slide labelled "Somersby, N.S.W. 2 viii 1958, K. M. Moore. From *E. sieberiana*". Slide deposited with AM. Paratypes: 7 slides: Somersby, 2 viii 1958; 4 to AM, 1 to BM, 1 to CS, 1 to FC. 7 slides: Wentworth Falls, 7 i 1959; to AM. In alcohol: Somersby. 2 viii 1958; 30 adults, and nymphs, to AM. Pinned: Somersby, 18 viii 1958; 7 males, 2 females, to AM, 6 males, 3 females, to CS.

Material Examined: 1 tube of 100 adults, and nymphs, Somersby, 2 viii 1958, to FC.

Notes: This species can be separated from that occurring on *E. haemastoma* by the more general and intense red suffusion and paler markings, and the absence of a pale median area on the abdomen. Placement of eggs by the two species at oviposition.



Text-fig. 19.—Aedeagus and claspers of *Glycaspis confecta*, sp. nov.

Text-fig. 20.—Aedeagus and claspers of *Glycaspis conserta*, sp. nov.

Text-fig. 21.—Aedeagus and claspers of *Glycaspis cyanoreios*, sp. nov.

Text-fig. 22.—Aedeagus and claspers of *Glycaspis salebroso*, sp. nov.

also differs. Eggs: In groups, near edge of leaf, at tip, near centre, or in a row along edge of leaf. Lerps: White; some may be dark red. Singly or in groups of up to 100; not contiguous until later instars; disposed along veins of leaf on upper or lower leaf-surface. Filaments may be very numerous during the first instar.

GLYCASPIS (GLYCASPIS) CYANOREIOS, SP. NOV.

(Gr. *kyanoreios* = of the blue mountain. Referring to the collection-locality of the types.)

General colour: pale green to yellow; paler than *G. seriata*.

Male: Head: width 0.73 mm.; vertex: along suture 0.29 mm., width 0.42 mm., yellow, edged faintly black; suture black; foveae pale grey; genal processes: length 0.29 mm., cream, suffused pale brown near apices; antennae: length 1.46 mm., pale brown except segs 9 and 10 which are black. Pronotum: width 0.59 mm., yellow, with lateral prominences and median area paler; prominences marked black at bases. Prescutum: cream, suffused yellow anteriorly, and edged black, darkest anteriorly. Scutum: cream except for two orange longitudinal stripes each side. Scutellum and metascutellum very pale cream with area between pale cream, and area postero-lateral to scutellum, orange. Metanotum: sometimes very faintly marked brown. Abdomen: orange, with longitudinal median area cream; transverse central black line on segs 2 to 5 or 6. Genitalia: upper plate suffused pale brown, darker at base; claspers and aedeagus as in Text-fig. 21. Length of aedeagus: (4 specimens) Extremes 0.245 mm. to 0.252 mm. Forewings: length 3.07 mm. Hindwings: Cu₁ as in Text-fig. 6. Ventral: Femora, tibiae and tarsi suffused dark brown.

Female: Coloration as for male, but dark markings more intense and extensive. Abdomen sometimes suffused red dorso-laterally. Genitalia: prominences of upper plate brown. Anal aperture surrounded with dark brown to black band.

Host-plant: *E. stricta* Sieb. (Blue Mountain mallee).

Type Locality: Wentworth Falls, N.S.W., $\frac{1}{2}$ mile north of township.

Types: Holotype male, nymphs, on slide labelled "Wentworth Falls, N.S.W. 6 i 1959, K. M. Moore. From *E. stricta*". Slide deposited with AM. Paratypes: 10 slides: Wentworth Falls, 6 i 1959; 8 to AM, 1 to BM, 1 to CS. In alcohol: Wentworth Falls, 6 i 1959; 60 adults to AM. Pinned: Katoomba, 15 i 1959; 3 males, 2 females, to AM; 3 males, 3 females, to CS.

Notes: Eggs: Orange-yellow; in groups of 25 to 100, at tip, near edge, or centre of leaf, but a few sometimes occur on edge of leaf. Lerps: White; situated along venation.

This species can be separated from *G. seriata* by: (1) Oviposition on edge of leaf; (2) Pale medio-dorsal area longitudinally (except vertex); (3) Shape of claspers; (4) Adults yellow or yellow-green, not orange; (5) Length of antennae; (6) Dark border on scutellum and metascutellum absent; (7) No brown marks on scutum; (8) Length of wings.

GLYCASPIS (GLYCASPIS) SALEBROSA, SP. NOV.

(L. *salebrosus* = rough, uneven. Referring to the rough outer surface and circumference of lerps of this species.)

General colour: (Pinned specimens) greenish-yellow, lightly marked with black and red-brown; abdomen dark green.

Male: (In alcohol.) Head: width 0.66 mm.; vertex: along suture 0.24 mm., width 0.37 mm., yellow, narrowly edged black; foveae and suture black; genal processes: length 0.27 mm., cream, suffused grey-brown; antennae: length 1.36 mm., brown, darker distally, segs 8 to 10 black. Pronotum: width 0.54 mm., yellow, lightly marked with black on anterior border; prominences cream, marked with black at bases; depression each side at half, grey. Prescutum: yellow, lightly marked red-brown anteriorly, and narrowly edged black. Scutum: yellow, narrowly edged black, more intense near scutellum; two brown or red longitudinal lines each side. Scutellum: cream, sometimes suffused grey. Metascutellum: cream; area between, yellow, suffused red-brown laterally. Post-metanotum: yellow, narrowly edged black, and ridges lightly black. Abdomen:

always red dorsally with anterior and posterior edges of seg. 1 narrowly black; narrow black transverse lines on grey bands on segs 2 to 6. Genitalia: upper plate brown to black; lower plate pale yellow, suffused grey, with anterior and posterior borders dark grey to black; claspers and aedeagus as in Text-fig. 22. Length of aedeagus: (23 specimens) Extremes 0.250 mm. to 0.270 mm. Forewings: length 2.71 mm., venation dark brown to black; base of costa and tornus edged black. Pterostigma and base of costa suffused white. Hindwings: Cu_1 as in Text-fig. 6. Ventral: Gular, mesopleura, lateral spot on metacoxae, and femora, tibiae, tarsi and abdomen, suffused brown.

Female: Larger and darker than male.

Host-plants: *E. piperita* and *E. campanulata* R. T. Baker (stringybark peppermint).

Type Locality: Somersby, N.S.W., $5\frac{1}{4}$ miles along Dog Trap Road from Pacific Highway at Ourimbah.

Types: Holotype male, allotype female, nymphs, on slide labelled "Somersby, N.S.W., 2 viii 1958, K. M. Moore. From *E. piperita*". Slide deposited with AM. *Paratypes*: From *E. piperita*. 7 slides: Somersby, 2 viii 1958; 4 to AM, 1 to BM, 1 to CS, 1 to FC. 4 slides: Wentworth Falls, 6 i 1958; to AM. 4 slides: Olney S.F. 13 viii 1959; to AM. 3 slides: Killara, 7 viii 1958; to AM. From *E. campanulata*. 7 slides: Cloud's Creek S.F. 6 v 1959; to AM. In alcohol: From *E. piperita*. Somersby, 2 viii 1958; 12 adults, and nymphs, to AM. Killara, 7 viii 1958; 1 adult, eggs and nymphs to AM. Wentworth Falls, 6 i 1958; 12 adults, and nymphs, to AM. Pinned: From *E. piperita*. Somersby, 18 viii 1958; 3 males, 4 females, to AM; 4 males, 4 females, to CS. Olney S.F. 12 xi 1958; 1 male to AM. Killara, 23 iv 1958; 5 females to AM.

Notes: Eggs: Deep yellow to orange; in groups of 20 to 100, nearly always near edge of leaf, but sometimes along mid-vein. Lerps: Cream, yellow or white; some with filaments; contiguous when large, in groups of 25 to 50, sometimes along veins, rarely on upper leaf-surface. Nymphs: Bright orange; slow-moving.

About 20 specimens on one leaf from Wentworth Falls were reared, and all were females, which suggests parthenogenetic reproduction.

No differences could be found between the specimens occurring on *E. piperita* and those on *E. campanulata*, and they are at present considered to be the same species.

GLYCASPIS (GLYCASPIS) AGGREGATA, sp. nov.

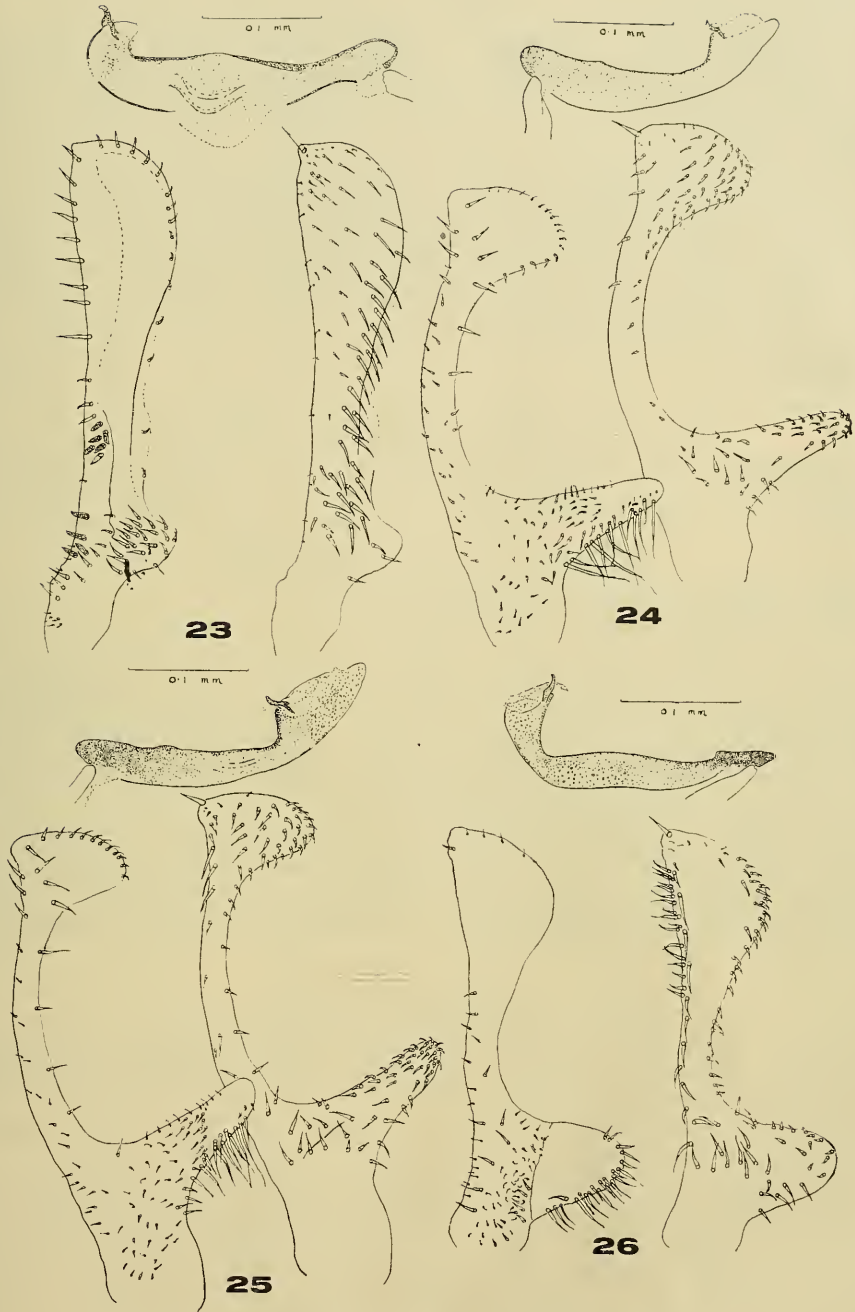
(*L. aggregatus* = herded together. Referring to the disposition of nymphs and lerps of this species.)

General colour: As *Glycaspis conserta*, but with less red suffusion; orange-red on thorax, abdomen and between scutellum and metascutellum.

Male: Head: width 0.83 mm.; vertex: along suture 0.27 mm., width 0.46 mm., coloration as *G. conserta*; genal processes: length 0.29 mm., usually with a black spot laterally, near apex; antennae: length 1.61 mm., colour as for *G. conserta*. Pronotum: width 0.66 mm., prominences with bases narrowly black in the form of an arc which terminates at half the length of prominence. Prescutum: yellow, suffused pale orange anteriorly, with narrow cream median line, remainder as for *G. conserta*. Scutum: cream, with two pale orange to orange-red wavy lines each side; small lateral prominences between scutum and prescutum, pale cream surrounded with grey-brown; area between scutellum and metascutellum sometimes suffused red. Abdomen: longitudinal median line cream, with orange-red area each side. Genitalia: claspers and aedeagus as in Text-fig. 23. Length of aedeagus: (12 specimens) Extremes 0.252 mm. to 0.267 mm. Forewings: length 2.93 mm. Hindwings: Cu_1 as in Text-fig. 6.

Female: Darker than male, and darker than *G. conserta*. Post-occipital sclerites grey to black. Genal processes black. Wavy lines on scutum, brown to grey, and area lateral to scutellum usually red with pronounced red-brown area. Ventral: Legs: Anterior and median femora black; coxae and trochanters suffused grey; tibiae and tarsi pale to dark grey. Posterior coxae with dark lateral mark; posterior femora, tibiae and tarsi paler than anterior and median. Gular area almost black; mesosternum dark brown to black.

Host-plant: *E. haemastoma* Smith (scribbly gum).



Text-fig. 23.—Aedeagus and claspers of *Glycaspis aggregata*, sp. nov.

Text-fig. 24.—Aedeagus and claspers of *Glycaspis baileyi*, sp. nov.

Text-fig. 25.—Aedeagus and claspers of *Glycaspis imponens*, sp. nov.

Text-fig. 26.—Aedeagus and claspers of *Glycaspis australoraria*, sp. nov.

Type Locality: Somersby, N.S.W., 5 miles along Dog Trap Road from Pacific Highway at Ourimbah.

Types: Holotype male, allotype female, on slide labelled "Somersby, N.S.W., 2 viii 1958, K. M. Moore. From *E. haemastoma*". Slide deposited with AM. Paratypes: 9 slides: Somersby, 2 viii 1958; 6 to AM, 1 to BM, 1 to CS, 1 to FC. 2 slides: Cowan, 25 iii 1960; 1 to AM, 1 to FC. 1 slide: St. Ives, 7 viii 1958; to AM. In alcohol: Cowan, 25 iii 1960, 10 adults to AM. Pinned: Somersby, 18 viii 1958; 5 males, 8 females, to AM; 6 males, 8 females, to CS.

Notes: Eggs: Bright orange; in small or large groups up to approximately 300, near edge of leaf; eggs in these groups are oviposited further apart than are those of *G. conserta*; no eggs were found on the edges of leaves, as were those of *G. conserta*. Lerp: White or yellow; large lerp are usually contiguous and situated along veins on upper or lower leaf-surface; dome-shaped, and with or without filaments. On 25 ix 1958, at Mona Vale, 288 occurred on one leaf.

This species can be separated from *G. conserta* by the darker coloration, and less red suffusion.

GLYCASPIS (GLYCASPIS) FLAVILABRIS (Froggatt) and
GLYCASPIS (GLYCASPIS) NIGRO-CINCTA (Froggatt).

The morphology and coloration of these two species are sufficiently distinct from all other known species of *Glycaspis* to obviate the need, at present, for slides of their genitalia.

(B) Subgenus GLYCASPIS (ALLOGLYCASPIS).

Type Species: *Glycaspis (Alloglycaspis) baileyi* sp. nov.

Type Locality: Lisarow, New South Wales.

Species contained in this subgenus constitute a heterogeneous group, and various indications of evident morphological affinities are discussed after the descriptions.

Apart from the broad classification adopted here, which is based primarily on the number of antennal rhinaria and secondly on the shape of the lerp (knowledge concerning which is at present limited), an attempt to arrange the species in a correct evolutionary sequence seems inadvisable until the majority of existing species have been collected, and biological details studied.

The presumed evolutionary sequence of the groups containing round lerp, then oval lerp and finally rectangular lerp, has been adopted, with species constructing rectangular lerp as the more recent and specialized group. Species within each group have been arranged in the sequence of their host-plant association, and correlated with Blakely's classification of the eucalypts.

ROUND LERPS.

GLYCASPIS (ALLOGLYCASPIS) BAILEYI, sp. nov.

(Named after Mr. F. M. Bailey of the Forestry Commission of N.S.W., who during 1944 officially reported the occurrence of *Glycaspis* sp. on *Eucalyptus saligna* Smith (Sydney blue-gum) on State Forests.)

General colour: red, or yellow, marked prominently with brown or black. Abdomen always with red medio-dorsal area.

Male: Head: width 0.68 mm.; anterior ocular sclerites brown with inner edges black, but may be all black; occipital sclerites cream, edged black posteriorly; vertex: along suture 0.27 mm., width 0.37 mm.; yellow marked brown or black, or all black; suture black; genal processes: length 0.32 mm.; turquoise or orange on recently emerged specimens, and later with variable amounts of red suffusion; antennae: length 1.68 mm.; segs 1 and 2 brown, seg. 3 grey-brown; each segment towards apex darker, with seg. 5 distally and segs 6 to 10 black. Pronotum: width 0.61 mm.; lateral prominences cream, with depression at bases marked brown; small depressions half-way between median line and lateral margins; brown to black except prominences and small areas each side of median line posteriorly; propleura cream, edged black. Prescutum: lateral ridges black, tipped cream distally; central area cream, narrowing anteriorly;

remainder dark brown to black, narrowly on posterior edge. Scutum: laterally bordered black; broad median stripe and small area near tegulae, yellow; mesopleuron rectangular, with raised prominence yellow; anterior half of dorsal and ventral borders, and anterior suture, narrowly edged brown to black. Scutellum and metascutellum cream, with area between, red. Metanotum: red-brown. Post-metanotum: yellow marked with brown or black; metapleura with suture from tegulae to spiracles, black. Abdomen: Always with red medio-dorsal area on segs 1 to 5; a short, narrow black line each side of anterior border on segs 1 and 2, 2nd seg. with central, transverse black line for width of red area; lines on segs 3 to 5 similar to that on seg. 2; seg. 6 yellow. Genitalia: upper genital plate pale yellow with variable brown to black basal area; lower plate cream with black on antero- and dorso-lateral borders continuing to a point near base of upper plate; claspers and aedeagus as in Text-fig. 24. Length of aedeagus: (150 specimens) Extremes 0.203 mm. to 0.250 mm. Forewing: length 3.07 mm.; posterior half may be suffused red; pterostigma and base of costa suffused white or red. Hindwing: venation colourless, except base of RS pale brown; Cu_1 as in Text-fig. 2. Ventral: Cream; dividing suture of genal processes brown, which may continue to occipital sclerites; brown to black area on postero-lateral angle of metacoxae; anterior and median femora grey on outer edges; tibiae and tarsi brown. Any portion of adults may be suffused with variable amounts of red or turquoise.

Female: General colour as for the male, but red suffusion more intense and black more extensive. Head: width 0.71 mm.; vertex: along suture 0.27 mm., width 0.39 mm.; genal processes: length 0.32 mm.; antennae: length 1.61 mm.; segs 3 to 7 pale brown, seg. 8 distally and segs 9 and 10 black. Pronotum: width 0.63 mm. Abdomen: narrow, central transverse black line on segs 2 to 5; anal aperture cream suffused red, surrounded with red and with broad postero-lateral black band. Genitalia: deflexed; distal prominences yellow. Forewings: length 3.34 mm. Other details are as for the male.

Host-plants: *E. saligna*, *E. robusta* Smith (swamp mahogany), *E. resinifera* Smith (red mahogany).

Type Locality: Lisarow, N.S.W., 1½ miles along Cut Rock Road from level-crossing.

Distribution: Cloud's Creek S.F., Doyle's River S.F., Moonpar S.F., Bulga S.F., Wyong S.F., Ourimbah S.F., and the Gosford-Wyong area generally.

Types: Holotype male, allotype female, on slide labelled "Lisarow, N.S.W. 20 vi 1960, K. M. Moore. From *E. saligna*". Slide deposited with AM. Paratypes: From *E. saligna*. 4 slides: Lisarow, 20 vi 1960; 1 to each of AM, BM, CS, FC. Remainder to AM, from Lisarow, 8 i 1960, (4); Lisarow, 20 x 1959, (34); Lisarow, 25 xi 1959, (4); Lisarow, 27 viii 1958, (1); Lisarow, 11 viii 1959, (1); Cloud's Creek S.F. 6 v 1959, (10); Doyle's River S.F. 8 v 1959, (7); Moonpar S.F. 4 v 1959, (8); Bulga S.F. 12 v 1959, (12); Bulga S.F. 11 v 1959, (7). From *E. resinifera*. 7 slides: Kincumber, 28 viii 1958, to AM. 6 slides: Wamberal, 2 x 1958, to AM. From *E. robusta*. 7 slides: Wamberal, 2 x 1958, to AM. In alcohol: From *E. saligna*. Lisarow, 20 vi 1960, 200 males and 200 females to each of AM, CS and FC. Remainder to AM; from Bulga S.F. 11 v 1959, 100 adults, and nymphs; Doyle's River S.F. 26 viii 1957, K. G. Campbell, 35 adults, and nymphs; Lisarow, 8 i 1960, and 8 iii 1960, 50 adults, and nymphs; Moonpar S.F. 17 ix 1958, G. Baur, 10 adults, and nymphs; Doyle's River S.F. 8 v 1959, 4 adults, and nymphs; Moonpar S.F. 4 v 1959, 100 adults, and nymphs; Lisarow 26 vi 1958, and 14 vii 1958, 50 adults; Lisarow, 7 viii 1960, 100 adults; Lisarow-Ourimbah, 1958-1959, 1 tube each of nymphs of each instar, and eggs. Pinned: From *E. saligna*. Lisarow, 15 vii 1959, 28 males, 31 females, to AM; 13 males, 15 females to CS. Lisarow, 9 xii 1958, 5 males, 4 females, to AM; 2 males, 2 females to CS. Lisarow, 27 viii 1958, 4 males, 4 females, to AM; 3 males, 3 females to CS. 23 specimens from Ourimbah S.F. 18 xi 1956, Lisarow, 6 vi 1959, Moonpar S.F. 17 ix 1958 G. Baur, to AM. From *E. robusta*. Wamberal, 16 x 1958, 8 to AM. From *E. resinifera*. Kincumber, 28 viii 1958, 4 to AM.

Notes: Lerps: 4 mm. to 5 mm. in diameter; white, round and conical.

Considerable biological data for this species will be given in a separate paper.

Two tubes of adults and nymphs, reared on *E. camaldulensis*, are in AM.

GLYCASPIS (ALLOGLYCASPIS) IMPONENS, sp. nov.

(*L. imponens* = deceiving. Referring to the similarity of this species to *G. baileyi* in coloration, morphology and biology.)

General colour: As for *G. baileyi*.

The description given for *G. baileyi* applies equally as well to *G. imponens*, but the two species are readily separable by: (a) The constant association of *G. imponens* with *Eucalyptus propinqua* Deane & Maiden (small-fruited grey gum) and not with the host-plants of *G. baileyi*; (b) The structure of the aedeagus of the male genitalia, and the claspers (Text-fig. 25).

Length of aedeagus: (44 specimens) Extremes 0.252 mm. to 0.286 mm.

Type Locality: Kincumber, N.S.W., 1½ miles along Killcare Road, south from Kincumber.

Distribution: Kincumber, Kurrajong, Wyong S.F.

Types: Holotype male, allotype female, on slide labelled "Kincumber, N.S.W. 23 x 1958, K. M. Moore. From *E. propinqua*". Slide deposited with AM. Paratypes: 8 slides: Kincumber, 23 x 1958, 5 to AM, 1 to each of BM, CS, FC. 5 slides: Kincumber, 29 xii 1958, to AM. 13 slides: Kurrajong, 6 xi 1958, to AM. In alcohol: Kincumber, 23 x 1958, 100 adults to each of AM, CS, FC. Pinned: Kincumber, 12 ix 1958, 6 males, 2 females, to AM.

Notes: The biology of *G. imponens* closely resembles that of *G. baileyi*, the species of closest affinity, and no differences between nymphs or lerps of these species were found.

GLYCASPIS (ALLOGLYCASPIS) AUSTRALORARIA, sp. nov.

(*L. australis* = southern; *L. orarius* = belonging to the coast. Referring to the collection-locality of the type.)

General colour: (Dried specimen) bright green, lightly marked with brown and black; centre of vertex and thorax yellow.

Male: Head: width 0.67 mm.; lemon-yellow; vertex: along suture 0.28 mm., width 0.39 mm.; lemon-yellow, suture very pale brown; lateral extremities of posterior border narrowly marked black; genal processes: length 0.31 mm.; cream, lightly suffused pale brown, internal edges suffused red; antennae: length 1.57 mm.; seg. 1 suffused pink. segs 1 to 6 pale brown, 3 to 6 darker distally, 7 and 8 dark brown with seg. 8 distally and segs 9 and 10 black. Pronotum: width 0.54 mm.; lemon-yellow with a small, longitudinal dark mark at base of each lateral prominence. Prescutum: lemon-yellow; brown-black anteriorly beneath pronotum; lateral margins narrowly black. Scutum: lemon-yellow; antero-lateral borders faintly marked brown; postero-lateral borders more prominently marked black. Scutellum: cream. Metascutellum: cream; brown areas on postero-lateral borders of metanotum and antero-lateral borders of post-metanotum. Abdomen: lemon-yellow; segs 2 to 5 each with a narrow, transverse brown line across the centre. Genitalia: lemon-yellow; narrowly marked pale brown at base and suffused red ventrally; lower plate lemon-yellow on antero-dorsal border; claspers and aedeagus as in Text-fig. 26. Length of aedeagus: (1 specimen) 0.234 mm. Forewings: length 2.39 mm.; pterostigma and base of costa suffused white. Hindwings: Cu₁ as in Text-fig. 4. Ventral: Cream to lemon-yellow; anterior and median legs suffused pale brown.

Host-plant: Collected on *Eucalyptus longifolia* Link & Otto (woolly-butt).

Type Locality: Corrimal, N.S.W., at camping-grounds, Corrimal east.

Types: Holotype male, and nymphs, on slide labelled "Corrimal, N.S.W. 9 x 1958, K. M. Moore; on *E. longifolia*". Slide deposited with AM.

GLYCASPIS (ALLOGLYCASPIS) STRUICIS, sp. nov.

(*L. struix* = a mass of things. Referring to the large population found when collecting the types.)

General colour: yellow to green, sometimes suffused red and with little or no black markings.

Male: Head: width 0.63 mm.; vertex: along suture 0.22 mm., width 0.34 mm.; pale orange; genal processes: length 0.27 mm.; orange, grey along inner edges; antennae: length 1.54 mm.; pale brown, darkening distally; segs 9 and 10 black. Pronotum: width 0.49 mm.; yellow. Prescutum: yellow. Scutum: yellow, with paler median longitudinal stripe. Metanotum: yellow. Abdomen: yellow. Genitalia: pale orange; claspers and aedeagus as in Text-fig. 27. Length of aedeagus: (19 specimens) Extremes 0.193 mm. to 0.218 mm. Forewings: length 2.37 mm. Hindwings: Cu_1 as in Text-fig. 4.

Female: Very similar to male. Occasional specimens with central transverse black lines on abdominal segs 2 to 6. Prescutum and scutum narrowly edged grey, and suture of vertex black; black sometimes on posterior border of vertex.

Host-plant: *Eucalyptus umbellata* (Gaertn.) Domin. (forest red-gum).

Type Locality: Merrylands, N.S.W.

Types: Holotype male, allotype female, nymphs, on slide labelled "Merrylands, N.S.W. 7 xi 1958, K. M. Moore. From *E. umbellata*". Slide deposited with AM. Paratypes: 9 slides: Merrylands, 7 xi 1958; 6 to AM, 1 to each of BM, CS, FC. In alcohol: Merrylands, 7 xi 1958, 70 adults, and nymphs, deposited with AM. Pinned: Merrylands, 7 xi 1958; 3 males, 3 females, to each of AM and CS.

Notes: Eggs: Scattered, singly or in groups of up to 50. Lerps: White, round and conical.

GLYCASPIS (ALLOGLYCASPIS) PRATENSIS, sp. nov.

(*L. pratum* = a meadow; *L. -ensis* = belonging to. Type specimens were collected in an open, meadow-like area.)

General colour: (Dried specimen) pale orange, abdomen sometimes pale green with a few dark markings.

Males: (Dried specimen) Head: width 0.71 mm.; vertex: along suture 0.29 mm., width 0.37 mm.; yellow, suffused pink, suture brown to black; posterior border grey; genal processes: length 0.34 mm.; yellow; antennae: length 1.66 mm.; pale brown, with segs 9 and 10 black. Pronotum: width 0.57 mm.; yellow. Prescutum: yellow edged black anteriorly. Scutum: longitudinal, broad cream stripe; lateral areas yellow, suffused pink. Scutellum and metascutellum cream; area between, rose-red, more intense laterally. Abdomen: transverse, narrow central black stripes on segs 2 to 4; pale orange suffused green. Genitalia: claspers and aedeagus as in Text-fig. 28. Length of aedeagus: (3 specimens) Extremes 0.223 mm. to 0.234 mm. Forewings: length 2.73 mm. Hindwings: Cu_1 as in Text-fig. 4.

Female: As for the male, but orange and black coloration more intense and extensive.

Host-plant: *Eucalyptus amplifolia* Naudin (cumbora or cabbage-gum).

Type Locality: Jilliby, N.S.W.

Types: Holotype male, allotype female, nymphs, on slide labelled "Jilliby, N.S.W. 15 x 1958, K. M. Moore. From *E. amplifolia*". Slide deposited with AM. Paratypes: 3 slides: Jilliby, 15 x 1958, to AM. Pinned: Jilliby, 15 x 1958, 2 males, 2 females, to AM; 1 male, 1 female, to CS.

Notes: Lerps: Round; scattered, scarce; singly, on either side of leaf.

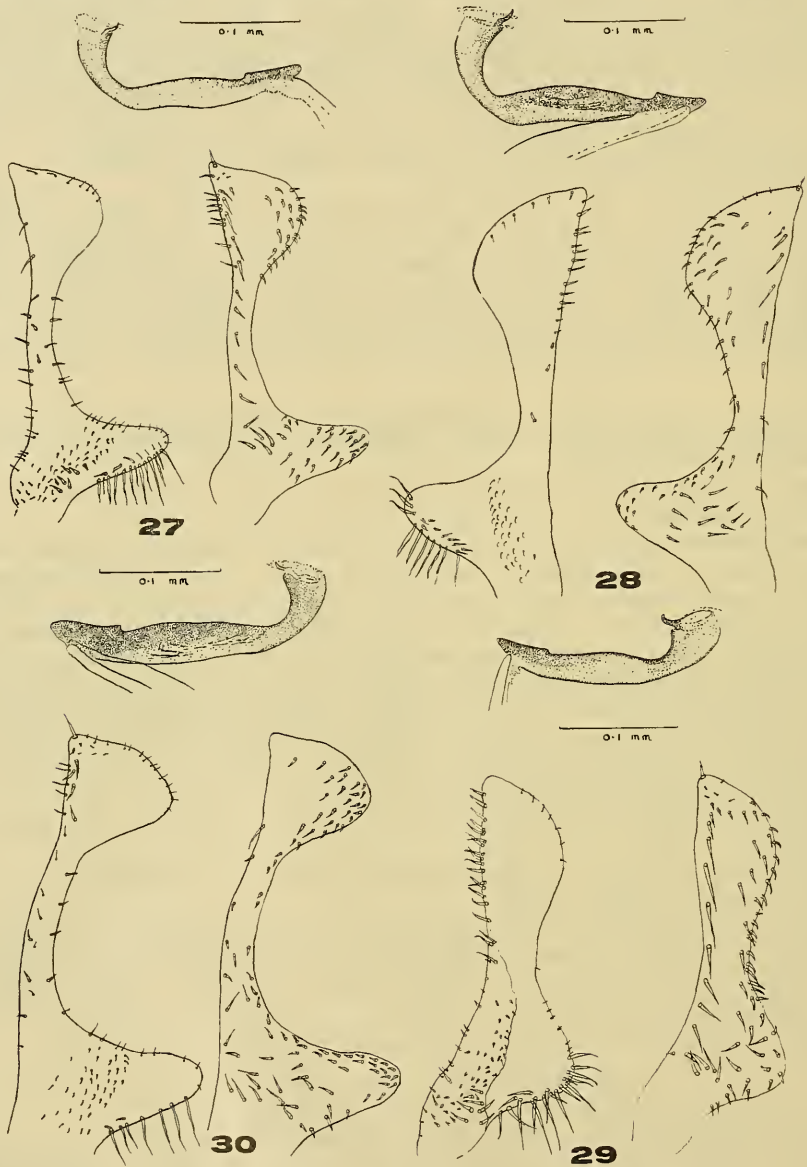
GLYCASPIS (ALLOGLYCASPIS) LACTEA, sp. nov.

(*L. lacteus* = milky. Referring to the appearance of the lerps.)

General colour: yellow, lightly marked with black and red.

Male: Head: width 0.63 mm.; pale yellow; vertex: along suture 0.24 mm., width 0.37 mm.; pale yellow suffused red anteriorly; median suture pale brown with posterior third black; posterior border black, extending onto post-ocular sclerites; genal processes: length 0.24 mm.; cream suffused pale brown ventrally and on internal edges; antennae: length 1.26 mm.; segs 1 and 2 pale cream, remainder darkening to seg. 8 which is black distally, segs. 9 and 10 black. Pronotum: width 0.51 mm.; pale yellow; anterior edge with small black marks each side, and across bases of prominences. Prescutum: pale yellow; black beneath pronotum, and borders narrowly and faintly black. Scutum: pale yellow; antero-lateral borders faintly and narrowly black; postero-

lateral borders prominently black. Scutellum: pale yellow. Metanotum: pale yellow, suffused pink. Post-metanotum: suffused pink medio-dorsally and small pale brown marks on antero-lateral borders. Abdomen: pale yellow; indistinct, narrow, transverse pale brown lines on segs 3 to 5. Genitalia: upper plate pale yellow with narrow, pale



Text-fig. 27.—Aedeagus and claspers of *Glycaspis struicis*, sp. nov.
 Text-fig. 28.—Aedeagus and claspers of *Glycaspis pratensis*, sp. nov.
 Text-fig. 29.—Aedeagus and claspers of *Glycaspis lactea*, sp. nov.
 Text-fig. 30.—Aedeagus and claspers of *Glycaspis montana*, sp. nov.

brown band around base dorsally; lower plate cream, with narrow black area along anterior border; claspers and aedeagus as in Text-fig. 29. Length of aedeagus: 0.193 mm. Forewings: length 2.29 mm.; suffused white; suffused lightly with brown on apical half. Hindwings: Cu_1 as in Text-fig. 2.

Female: General colour darker than male, with orange on scutum and meta-scutellum laterally, and abdomen dorsally. Black markings more extensive and intense than on male. Vertex as male but with lateral edges and foveae black. Pronotum with median suture black, and a central brown spot each side, at half. Abdomen with short, narrow transverse black lines surrounded with diffused grey area on segs 2 to 5, and suffused red dorsally. Anal aperture with triangular black area at postero-lateral angles.

Host-plant: Uncertain identification; but either *Eucalyptus blakelyi* Maiden (Blakely's red-gum) or *Eucalytus dealbata* A. Cunn. (tumbledown gum).

Type Locality: Strahorn State Forest (Dubbo Forestry District).

Types: Holotype male, allotype female, on slide labelled "Strahorn S.F. 1 iv 1960. K. M. Moore. From *E. blakelyi* or *E. dealbata*". Slide deposited with AM. Paratypes: In alcohol: Strahorn S.F. 1 iv 1960, 4 males, 1 female, to AM.

Notes: Lerps: Round and more or less dome-shaped.

GLYCASPIS (ALLOGLYCASPIS) MONTANA, sp. nov.

(*L. montanus* = belonging to a mountain. Referring to the collection-locality for this species.)

General colour: As for *G. baileyi* and *G. imponens* except that: there is usually brown suffusion on scutum; claspers are paler in colour and whitish at distal edge; black transverse lines on abdomen are longer and wider; there is less red on dorsal aspect of abdomen, which may be pink, sometimes suffused yellow.

Male: Head: width 0.63 mm.; vertex: along suture 0.22 mm., width 0.37 mm.; genal processes: length 0.27 mm.; antennae: length 1.66 mm.; pale brown proximally, darkening toward distal segs with segs 9 and 10 black. Pronotum: width 0.51 mm. Genitalia: claspers and aedeagus as in Text-fig. 30. Length of aedeagus: (8 specimens) Extremes 0.227 mm. to 0.248 mm. Forewings: length 2.59 mm. Hindwings: Cu_1 as in Text-fig. 2.

Host-plant: *Eucalyptus dunnii* Maiden (Dunn's white-gum).

Type Locality: Along Grafton Road, 10 miles north of Cloud's Creek, N.S.W.

Types: Holotype male, allotype female, nymphs, on slide labelled "Cloud's Creek, N.S.W. 6 v 1959, K. M. Moore. From *E. dunnii*". Slide deposited with AM. Paratypes: 7 slides: Cloud's Ck., 6 v 1959, to AM. 2 slides: Cloud's Ck., October 1958, G. Baur, to AM. In alcohol: Cloud's Ck., 6 v 1959; 20 adults, and nymphs, to AM. Pinned: Cloud's Creek, October 1958, G. Baur; 1 female to AM.

Notes: Lerps, nymphs and general biology similar to *G. baileyi* and *G. imponens*.

GLYCASPIS (ALLOGLYCASPIS) MINUSCULA, sp. nov.

(*L. minusculus* = very small. Referring to the comparatively small size of this species.)

This species was not described prior to being placed on a slide.

The aedeagus cannot be confused with any of the other species examined. Claspers and aedeagus as in Text-fig. 31. Forewings: length 2.17 mm. Hindwings: Cu_1 as in Text-fig. 3.

Host-plant: *Eucalyptus cinerea* F. Muell. (argyle apple).

Type Locality: Along Hume Highway, 26 miles north of Goulburn, N.S.W.

Types: Holotype male, on slide labelled "Goulburn, N.S.W. 23 ii 1959, K. M. Moore. On *E. cinerea*". Slide deposited with AM.

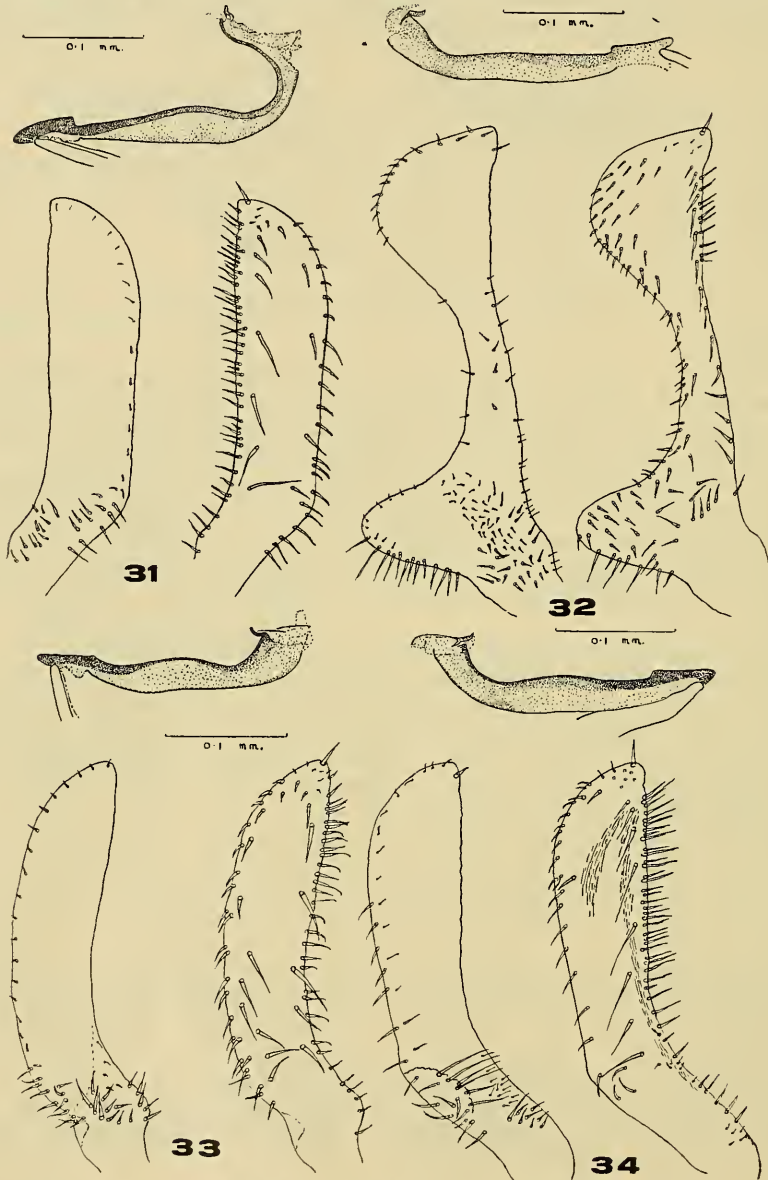
GLYCASPIS (ALLOGLYCASPIS) VELLEROSA, sp. nov.

(*N.L. vellerosus* = woolly, fleecy. Referring to the woolly appearance of the lerps which bear large numbers of filaments on the outer surface.)

General colour: pale green to yellow, suffused reddish-orange.

Male: Head: width 0.73 mm.; vertex: length along suture 0.29 mm., width 0.39 mm.; deep yellow, lightly suffused red; suture black; posterior border prominently marked with black; foveae brown; anterior and lateral borders marked with diffused red-brown; genal processes: length 0.34 mm.; pale yellow, inner edges marked with black;

antennae: length 2.02 mm.; brown, darker distally; segs 9 and 10 black. Pronotum: width 0.59 mm.; yellow, palest medianly; black marks at bases of prominences; anterior edge marked lightly with grey. Prescutum: deep yellow; black apically beneath pronotum, with edges narrowly marked black except posterior border. Scutum: deep



Text-fig. 31.—Aedeagus and claspers of *Glycaspis minuscula*, sp. nov.

Text-fig. 32.—Aedeagus and claspers of *Glycaspis vellerosa*, sp. nov.

Text-fig. 33.—Aedeagus and claspers of *Glycaspis suavis*, sp. nov.

Text-fig. 34.—Aedeagus and claspers of *Glycaspis rivalis*, sp. nov.

yellow suffused red, with pale yellow median longitudinal line; posterior border prominently edged black. Metanotum: Scutellum and metascutellum pale yellow, with area between suffused rose-red which extends laterally and is edged posteriorly with grey. Post-metanotum suffused rose-red, with black antero-laterally. Abdomen: yellow,

with two distal segments suffused red; short grey to black central transverse lines on segs 2 to 6. These marks may be very faint on some specimens. Genitalia: yellow suffused red; anterior border of lower plate edged narrowly with black; claspers and aedeagus as in Text-fig. 32. Length of aedeagus: (5 specimens) Extremes 0.223 mm. to 0.245 mm. Forewings: length 2.88 mm.; venation pale brown, intensifying to base of wings. Hindwings: Cu, as in Text-fig. 4.

Female: Red suffusion usually more extensive than on the male. Dark lines on abdomen usually brown, and more extensive, often on a dark red-brown background. Anal aperture with a broad triangular mark at each postero-lateral corner.

Host-plant: Uncertain identification, but either *Eucalyptus bosistoana* F. Muell. (Bosisto's box), or *Eucalyptus hemiphloia* F. Muell. (grey box).

Type Locality: Prospect, N.S.W., $\frac{3}{4}$ mile west of township.

Types: Holotype male, allotype female, nymphs, on slide labelled "Prospect, N.S.W. 1 ix 1958, K. M. Moore. From *E. bosistoana* or *E. hemiphloia*". Slide deposited with AM. Paratypes: 5 slides: Prospect, 1 ix 1958, 4 to AM, 1 to CS. In alcohol: Prospect, 1 ix 1958, 15 adults, and nymphs, to AM. Pinned: Prospect, 1 ix 1958, 3 males, 3 females, to AM; 2 males, 3 females, to CS.

Notes: Lerps: Round, white, very large, up to 6.5 mm. in diameter and 6 mm. in height; filaments appear fine in comparison to size of lerp.

GLYCASPIS (ALLOGLYCASPIS) SUAVIS, sp. nov.

(*L. suavis* = sweet. Referring to the lerps of this species.)

General colour: yellow, lightly marked with black. Abdomen turquoise or yellow, with black bands. Metanotum always with rose-pink area near each postero-lateral angle of scutellum.

Male: Head: width 0.61 mm.; yellow; vertex: along suture 0.24 mm., width 0.37 mm.; median suture very pale brown; posterior border black, which extends on to post-ocular sclerites; foveae indistinctly black; genal processes: length 0.20 mm.; yellow; antennae: length 0.93 mm.; suffused brown, darkening distally, seg. 9 dark brown, seg. 10 black. Pronotum: width 0.54 mm.; yellow; indistinct dark mark below each prominence; pale brown central spot at half, each side of median line. Prescutum: yellow; black anteriorly beneath pronotum, and anterior half of lateral borders. Scutum: yellow; antero-lateral borders faintly and narrowly black; postero-lateral borders more prominently black. Scutellum: pale yellow. Metanotum: rose-pink area with brown base, posterior to each postero-lateral corner of scutellum. Post-metanotum: faintly suffused pink, and antero-lateral borders lightly and narrowly black. Abdomen: yellow or green; indistinct transverse central grey lines on segs 2 to 4. Genitalia: upper plate cream; lower plate with grey area at antero-dorsal corner near base of upper plate; claspers and aedeagus as in Text-fig. 33. Length of aedeagus: (2 specimens) 0.227 mm. and 0.218 mm. Forewings: length 2.04 mm.; rounded apically. Hindwings: Cu, as in Text-fig. 3.

Female: General colour more lemon-yellow than on male, and dark markings more extensive and intense. Suffused grey transverse lines on abdomen are larger, and on segs 2 to 5 are paler and narrower medianly, than on male. Abdomen always bright green.

Host-plant: *Eucalyptus populifolia* Hook. f. (bimble box).

Type Locality: Strahorn State Forest (Dubbo Forestry District), N.S.W.

Types: Holotype male, allotype female, on slide labelled "Strahorn S.F. 1 iv 1960, K. M. Moore. From *E. populifolia*". Slide deposited with AM. Paratypes: 1 slide: Strahorn S.F. 1 iv 1960, to AM. In alcohol: Strahorn S.F. 1 iv 1960, 25 adults to AM.

Notes: Eggs: In groups, anywhere on leaves. Lerps: Round and conical, usually with filaments; found on larger leaves only.

GLYCASPIS (ALLOGLYCASPIS) RIVALIS, sp. nov.

(*L. rivalis* = a rival. Referring to apparent competition of this species with others of the same genus on the host-plant.)

General colour: pale to dark brown; considerable variation in intensity of coloration on specimens from different areas. Intergradation in coloration with *G. permista*.

Male: (Dark specimen) Head: width 0.66 mm.; vertex, along suture 0.22 mm., width 0.37 mm.; deep cream bordered narrowly brown-black; suture black, edged widely dark brown posteriorly, narrowing anteriorly; foveae brown-black; genal processes: length 0.32 mm.; suffused red; antennae: length 1.56 mm.; pale brown darkening distally; segs 9 and 10 black. Pronotum: width 0.59 mm.; dark brown; suture black; prominences cream. Prescutum: dark brown to black with posterior median area cream. Scutum: narrowly edged black; dark brown lateral areas; wide longitudinal median stripe pale brown, often with a narrow median longitudinal line brown-black. Scutellum: cream, marked dark brown posteriorly. Metascutellum: dark brown; area between, cream medianly, dark brown laterally. Post-metanotum: dark brown to black. Abdomen: cream, suffused red; wide black transverse lines on segs 2 to 6. Genitalia: base of upper plate dark brown; lower plate with dorsal and anterior edges brown-black; claspers with dark area near distal end; claspers and aedeagus as in Text-fig. 34. Length of aedeagus: (19 specimens) Extremes 0.216 mm. to 0.248 mm. Forewings: length 2.66 mm. Hindwings: Cu₁ as in Text-fig. 3. (Pale specimen) Dark brown areas reduced, or may be absent except on edges of vertex, and suture, suture of pronotum, edges of prescutum and scutum, and edges of post-metanotum. Transverse lines on abdominal segments may be greatly reduced. Any part may be suffused red.

Female: Abdomen usually orange before feeding, turning to red. Whole adult often red. Dark marks on dorsal aspect of abdomen usually more extensive than on male.

Host-plant: *Eucalyptus paniculata* Smith (grey ironbark).

Type Locality: Ourimbah State Forest (Section 1, Compartment 3).

Types: Holotype male, allotype female, on slide labelled "Ourimbah S.F., 20 xi 1958, K. M. Moore. From *E. paniculata*". Slide deposited with AM. Paratypes: 7 slides: Ourimbah S.F. 20 xi 1958, 5 to AM, 1 to BM, 1 to CS. 5 slides: Wamberal, 26 xi 1958, to AM. 2 slides: Wamberal, 15 x 1959, to AM. In alcohol: Ourimbah S.F. 20 xi 1958, 150 adults, and nymphs, to AM. Ourimbah S.F. 8 ix 1960, 40 adults to CS. Remainder to AM from Kincumber, 7 ix 1960, (25 adults); Kincumber 15 vii 1960, (10 adults); Kincumber, 27 xi 1958, (120 adults, and nymphs); Wamberal, 16 vi 1960, (30 adults); Wamberal, 15 x 1959, (50 adults, and nymphs); Wamberal, 26 xi 1958, (10 adults, and nymphs); Wyong S.F. 7 xii 1958, (100 adults, and nymphs); Lisarow, 21 iii 1959, (50 adults, and nymphs). Pinned: Ourimbah S.F. 6 viii 1958, 5 males, 2 females, to AM; 4 males, 1 female, to CS; Ourimbah S.F. 10 ix 1958, 7 males, 4 females, to AM; 6 males, 3 females, to CS; Ourimbah S.F. 14 xi 1956, 1 female to AM; Kincumber, 28 viii 1958, 2 males, 6 females, to AM; Wyong S.F. 17 xii 1958, 5 males, 4 females, to AM; 5 males, 3 females, to CS.

Notes: Lerps: Round, white, conical; about 4 mm. in diameter. Nymphs: Dark in last instar; similar to those of *G. baileyi*, but not as dark.

GLYCASPIS (ALLOGLYCASPIS) PILATA, sp. nov.

(*L. pilatus* = thick, dense. Referring to large numbers of lerps found on this host.)

General colour: similar in general markings to *G. rivalis*, the description of which is the same as for this species. Coloration variable.

Male: Head: width 0.66 mm.; vertex: along suture 0.22 mm., width 0.37 mm.; cream, prominently edged black; suture, and usually on vertex from suture to foveae and to posterior border, black; genal processes: length 0.27 mm.; suffused red; antennae: length 1.51 mm.; brown, darkening to distal end; segs 7 to 10 black. Pronotum: width 0.57 mm.; brown-black except prominences. Prescutum: as *G. rivalis*. Scutum: as *G. rivalis*; area between scutellum and metascutellum orange-red. Remainder as *G. rivalis*. Genitalia: claspers and aedeagus as in Text-fig. 35. Length of aedeagus: (6 specimens) Extremes 0.236 mm. to 0.263 mm. Forewings: length 2.59 mm. Hindwings: Cu₁ as in Text-fig. 3. Adults may be lightly marked with brown only.

Host-plant: *Eucalyptus paniculata*.

Type Locality: Kurrajong, N.S.W. (Bell-bird Corner, on Bell Road).

Types: Holotype male, on slide labelled "Kurrajong, N.S.W. 25 ix 1959, K. M. Moore. From *E. paniculata*". Slide deposited with AM. Paratypes: 5 slides: Kurrajong, 25 ix 1959, to AM. In alcohol: Kurrajong, 27 viii 1960, 40 adults to AM.

Notes: Lerps: Round and conical.

GLYCASPIS (ALLOGLYCASPIS) MANNIFERA, (Froggatt).

The aedeagus and claspers of a co-type of *Glycaspis mannifera* (Froggatt) are given in Text-fig. 36.

As the lerps of this species are not known and the identity of the host-plant is uncertain, the figures have been given here so that it may be correctly placed when its biology is known.

OVAL LERPS.

Adults of this group bear a single rhinarium on each of antennal segments 4, 5, 6, 8 and 9, as do those constructing flat or round lerps, and are considered to be the most recent of those three groups in evolutionary development. Oval lerps are most similar in shape to the rectangular lerps.

GLYCASPIS (ALLOGLYCASPIS) IGNEA, sp. nov.

(*L. igneus* = fiery. Referring to the very quick movements of the nymphs.)

General colour: bright turquoise or green on abdomen and thorax; sometimes yellow or orange, lightly marked with black; there is considerable variation in coloration in this species.

Male: Head: width 0.66 mm.; vertex: length 0.27 mm., width 0.34 mm.; yellow, suffused red; suture black, foveae brown-black; posterior border marked with black; genal processes: length 0.29 mm.; suffused red, internal edges darkly marked; antennae: length 1.80 mm.; pale brown proximally, darkening distally; seg. 6 black apically, segs 7 to 10 black. Pronotum: width 0.54 mm.; yellow; anterior edge black; black marks at bases of prominences. Prescutum: yellow; black anteriorly, to beyond pronotum and narrowly edged black, except posterior border. Scutum: width 0.59 mm.; yellow median stripe; suffused red laterally; postero-lateral edges marked with black, most prominently near scutellum. Scutellum and metascutellum yellow, with area between rose-red, which extends laterally and is suffused with black. Post-metanotum: pink to red with a central anterior black spot, and anterior borders black transversely. Abdomen: yellow suffused red, palest medianly; prominent black transverse lines on segs 2 to 5. Genitalia: upper plate red, base indistinctly marked grey; lower plate cream, with anterior border marked with black; claspers suffused pink; claspers and aedeagus as in Text-fig. 37. Length of aedeagus: (16 specimens) Extremes 0.223 mm. to 0.239 mm. Forewings: 2.61 mm.; suffused pale honey-colour, apically. Hindwings: Cu_1 as in Text-fig. 2.

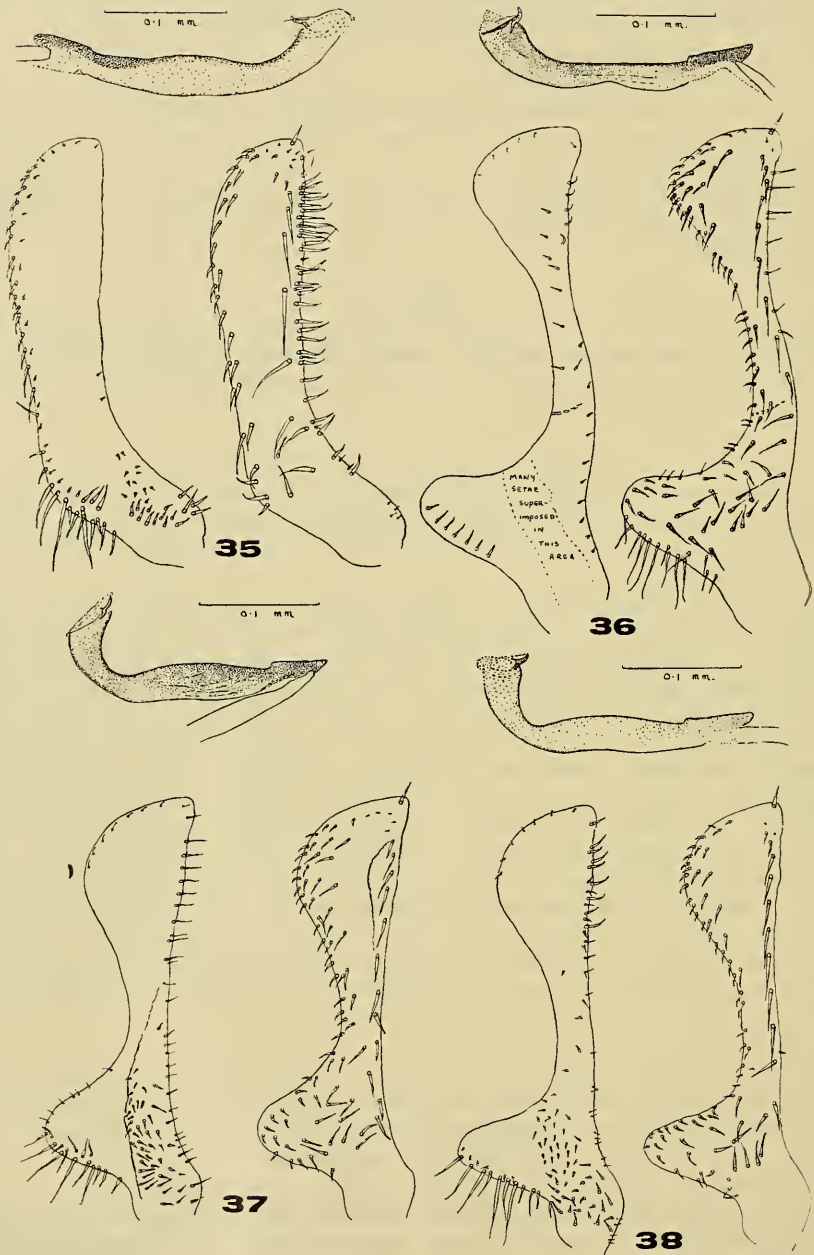
Female: Abdomen often rose-red dorsally, or various amounts of red more extensive than on male. Black more intense and extensive than on the male, except on abdomen. Wings more darkly suffused honey-colour than on the male.

Host-plant: *Eucalyptus deanei* Maiden (Deane's gum).

Type Locality: Ourimbah State Forest, Section 1, Compartment 3.

Types: Holotype male, allotype female, on slide labelled "Ourimbah S.F. 2 ix 1958, K. M. Moore. From *E. deanei*". Slide deposited with AM. Paratypes: 11 slides: Ourimbah S.F. 2 ix 1958, 8 to AM, 1 to each of BM, CS, FC. In alcohol: Ourimbah S.F. 6 vii 1960, 130 adults to CS; Ourimbah S.F. 6 vii 1960, 100 adults to FC. Remainder to AM, all from Ourimbah S.F., 18 iii 1959, (3 adults and nymphs); 20 xi 1958, (2 adults); 21 iv 1959 (30 adults); 19 vi 1959 (20 adults); 6 vii 1960 (100 adults); 2 ix 1958 (30 adults and nymphs). Pinned: Ourimbah S.F. 2 ix 1958, 6 males, 4 females. to each of AM and CS.

Notes: Lerps: Round or oval.



Text-fig. 35.—Aedeagus and claspers of *Glycaspis pilata*, sp. nov.
 Text-fig. 36.—Aedeagus and claspers of *Glycaspis mannifera* (Froggatt).
 Text-fig. 37.—Aedeagus and claspers of *Glycaspis ignea*, sp. nov.
 Text-fig. 38.—Aedeagus and claspers of *Glycaspis oraria*, sp. nov.

GLYCASPIS (ALLOGLYCASPIS) ORARIA, sp. nov.

(*L. orarius* = belonging to the coast. Referring to the collection-locality of the types.)

General colour: (Dried specimen) green, yellow-green or yellow, with faint dark markings.

Male: Head: width 0.68 mm.; vertex: along suture 0.29 mm., width 0.39 mm.: yellow; foveae pale brown, small; suture dark on posterior half only; a small black line in centre of each side of posterior border; genal processes: length 0.37 mm.; cream, suffused brown on inner edges; antennae: length 1.85 mm.; pale brown, darkening distally, with segs 9 and 10 black. Pronotum: width 0.54 mm.; small black line each side on anterior edge opposite to the similar lines on border of vertex; indistinct pale brown marks at bases of prominences. Prescutum: yellow; black at apex beneath pronotum; antero- and postero-lateral edges, narrowly black. Scutum: yellow with cream medio-dorsal area; lateral borders narrowly edged black, prominently black near scutellum; rose-pink areas near posterior corners of scutellum. Scutellum, metascutellum and area between, cream. Metanotum: yellow. Abdomen: yellow, with thin grey transverse central lines, usually on segs 2 to 5. Genitalia: yellow, with base of upper plate suffused grey; lower plate with small black area at corner of anterior and upper edges; claspers and aedeagus as in Text-fig. 38. Length of aedeagus: (5 specimens) Extremes 0.232 mm. to 0.248 mm. Forewings: 2.83 mm.; venation cream, to pale brown at base of wings. Hindwings: Cu_1 as in Text-fig. 4.

Female: Black markings more intense than on male.

Host-plant: Identification uncertain, but probably a hybrid of *Eucalyptus robusta* Smith (swamp mahogany) \times *Eucalyptus resinifera* Smith (red mahogany).

Type Locality: Mona Vale, N.S.W., 1 to 2 miles west of Mona Vale, along St. Ives Road.

Types: Holotype male, allotype female, on slide labelled "Mona Vale, N.S.W. 25 ix 1958, K. M. Moore. From *E. robusta* \times *E. resinifera*". Slide deposited with AM. Paratypes: 5 slides: Mona Vale, 25 ix 1958, to AM. 5 slides: Kincumber, 29 xii 1958. to AM. In alcohol: Mona Vale, 25 ix 1958, 5 adults, to AM. Pinned: Kincumber, 29 xii 1958. 2 males, 2 females, to AM. Mona Vale, 24 ix 1958, 1 male, 3 females, to AM.

Notes: Lerps: Round, or tend to be oval; white to yellow; occur singly, or contiguous, and with or without filaments.

GLYCASPIS (ALLOGLYCASPIS) CONVALLARIA, sp. nov.

(N.L. *convallarius* = pertaining to a valley. The types were collected in a broad, savannah valley.)

General colour: yellow-green, sometimes lightly marked with black.

Male: Head: width 0.66 mm.; vertex: along suture, 0.29 mm., width 0.34 mm.; genal processes: length 0.34 mm.; dark along inner edges; antennae: length 1.85 mm.; suffused pale brown, darkening distally; segs 9 and 10 black. Pronotum: width 0.63 mm. Abdomen: dark marks absent. Genitalia: claspers and aedeagus as in Text-fig. 39. Length of aedeagus: (3 specimens) Extremes 0.259 mm. to 0.267 mm. Forewings: length 2.68 mm. Hindwings: Cu_1 as in Text-fig. 4.

Female: Larger than the male, sometimes with small dark medio-dorsal marks on abdominal segs 2 to 5; prescutum may be black apically beneath pronotum.

Host-plant: *E. blakelyi*.

Type Locality: 10 miles south-east of Breeza, along Quirindi Road.

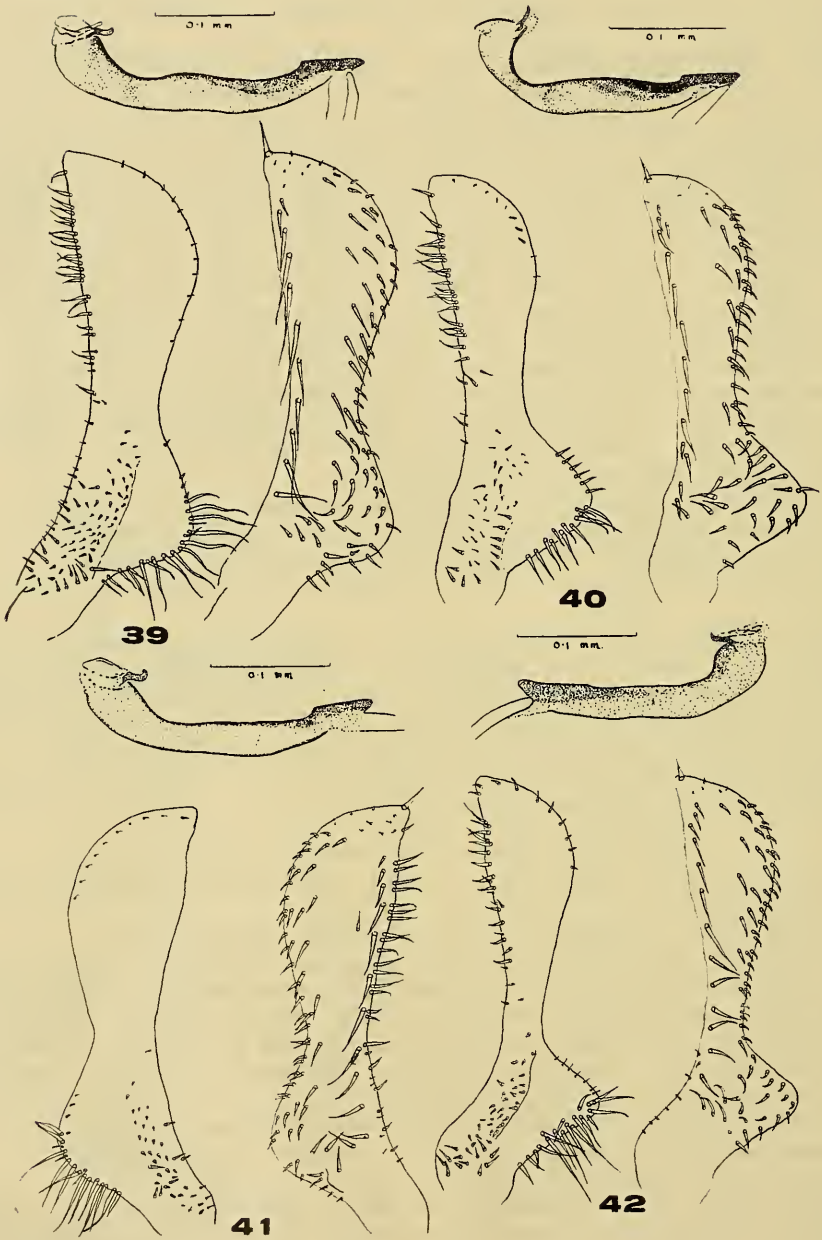
Types: Holotype male, allotype female, nymph, on slide labelled "Breeza, N.S.W. 13 x 1960, K. M. Moore. From *E. blakelyi*". Slide deposited with AM. Paratypes: 2 slides: Breeza, 13 x 1960, to AM.

Notes: Some lerps tend to be oval.

GLYCASPIS (ALLOGLYCASPIS) AMNICOLA, sp. nov.

(*L. amnicola* = one that dwells by a river. Referring to the occurrence of this species along the inland rivers of N.S.W.)

General colour: pale yellow, suffused orange.



Text-fig. 39.—Aedeagus and claspers of *Glycaspis convallaria*, sp. nov.

Text-fig. 40.—Aedeagus and claspers of *Glycaspis amnicola*, sp. nov.

Text-fig. 41.—Aedeagus and claspers of *Glycaspis locaridensis*, sp. nov.

Text-fig. 42.—Aedeagus and claspers of *Glycaspis kurrajongensis*, sp. nov.

Male: Head: width 0.68 mm.; vertex: along suture 0.27 mm., width 0.39 mm.; orange, with suture and the centre of each side of the posterior edge, black; genal processes: length 0.34 mm.; suffused pale orange, with inner edges dark brown; antennae: length 1.61 mm.; pale brown proximally, to dark brown distally, with segs 9 and 10 black. Pronotum: width 0.61 mm.; cream, suffused orange; dark marks at bases of cream prominences; centre of each side of anterior edge black, which is placed opposite to the corresponding black marks on posterior edge of vertex. Prescutum: cream, suffused orange; borders faintly and narrowly black; apex to beyond pronotum, black. Scutum: orange, with broad longitudinal median stripe cream; edged faintly with black, but prominently near scutellum. Scutellum and metascutellum cream; area between, rose-red lightly marked with black on anterior edges. Metanotum: orange, with narrow black lines each side of metascutellum. Abdomen: orange. Genitalia: upper plate suffused orange; lower plate cream with part of anterior border marked with black; claspers and aedeagus as in Text-fig. 40. Length of aedeagus: (1 specimen) 0.227 mm. Forewings: length 3.05 mm. Hindwings: Cu, as in Text-fig. 4.

Host-plant: *Eucalyptus camaldulensis* Dehn. (Murray red-gum).

Type Locality: Tocumwal, N.S.W.

Types: Holotype male on slide labelled "Tocumwal, N.S.W. 10 ii 1959, K. G. Campbell. From *E. camaldulensis*". Slide deposited with AM. Paratypes: 2 slides: Tocumwal, 10 ii 1959, K. G. Campbell; to AM. In alcohol: Millewa S.F. v 1959, K. G. Campbell, 1 male and nymphs to AM.

Notes: Eggs: Usually singly, on or near to edge of leaf. Lerps: Round, but larger lerps oval (approx. 4.6 mm. × 3.7 mm.); filaments usually present.

GLYCASPIS (ALLOGLYCASPIS) LOCARIDENSIS, sp. nov.

(*L. locus* = a place; *L. aridus* = dry; *L. -ensis* = belonging to. The type locality is in a comparatively dry area.)

General colour: (Live specimens) bright green, with vertex, prescutum and scutum suffused yellow; very few dark markings. Pale yellow in alcohol.

Male: Head: width 0.71 mm.; vertex: along suture 0.27 mm., width 0.39 mm.; genal processes: length 0.34 mm.; projecting slightly inwards at tips; suffused dark grey along internal edges; antennae: length 1.59 mm.; suffused pale brown, slightly darker distally, with seg. 9 dark brown and seg. 10 black. Pronotum: width 0.57 mm. Genitalia: claspers and aedeagus as in Text-fig. 41. Length of aedeagus: (2 specimens) 0.256 mm., 0.243 mm. Forewings: length 2.51 mm.; suffused honey-colour; pterostigma and base of costa suffused white. Hindwings: Cu₁, as in Text-fig. 4.

Female: As the male, but slightly deeper in colour.

Host-plant: *E. populifolia*.

Type Locality: Strahorn State Forest (Dubbo Forestry District).

Types: Holotype male, allotype female, on slide labelled "Strahorn S.F. i iv 1960, K. M. Moore. From *E. populifolia*". Slide deposited with AM. Paratypes: 1 slide: Strahorn S.F. 1 iv 1960, to AM. In alcohol: Strahorn S.F. 1 iv 1960, 1 female to AM.

Notes: Eggs: Occur singly; on either side of leaf and in any position on leaf. Lerps: Mainly on young foliage. Small lerps round, but oval during late instars; filaments numerous during all instars.

GLYCASPIS (ALLOGLYCASPIS) KURRAJONGENSIS, sp. nov.

(*L. -ensis* = belonging to. Referring to the type locality.)

General colour: cream, lightly marked with black.

Male: Head: width 0.61 mm.; vertex: along suture 0.22 mm., width 0.32 mm.; suffused orange; foveae grey to black, suture black, edges sometimes suffused grey; posterior edge black; genal processes: length 0.29 mm.; suffused red; antennae: length 1.49 mm.; pale brown proximally, darkening towards distal end with segs 7 to 10 black. Pronotum: width 0.49 mm.; cream suffused orange-red medianly; foveae grey which extends to posterior border; prominences cream edged black posteriorly; anterior border prominently black. Prescutum: yellow, suffused orange-red; borders lightly

marked with black. Scutum: orange-red, narrowly edged black, with broad, cream longitudinal median stripe. Scutellum and metascutellum cream, with area between orange-red and laterally brown, suffused red. Abdomen: orange-red, broad transverse black lines on segs 2 to 6. Genitalia: cream; upper plate black at base; lower plate black at antero-dorsal corners; claspers and aedeagus as in Text-fig. 42. Length of aedeagus: (17 specimens) Extremes 0.200 mm. to 0.216 mm. Forewings: length 2.68 mm.; faintly suffused orange-red near apex. Hindwings: Cu, as in Text-fig. 4.

Female: Darker than the male.

Host-plant: *E. paniculata*.

Type Locality: Kurrajong, N.S.W. (At Bell-bird Corner, on Bell Road.)

Types: Holotype male, allotype female (taken *in copula*), on slide labelled "Kurrajong, N.S.W. 25 ix 1959, K. M. Moore. From *E. paniculata*". Slide deposited with AM. Paratypes: 8 slides: Kurrajong, 25 ix 1959, 5 to AM, 1 to CS, 1 to BM, 1 to FC. In alcohol: Kurrajong, 27 viii 1960, 35 adults to AM.

Notes: Lerps: Oval.

This species is similar in coloration to *G. permista*, sp. nov.

GLYCASPIS (ALLOGLYCASPIS) PERMISTA, sp. nov.

(*L. permistus* = mixed, confused. Referring to the confusing of this with similar species.)

General colour: orange-red marked with black. Intergradation in coloration with that of *G. rivalis* occurs.

Male: Head: width 0.63 mm.; vertex: along suture 0.29 mm., width 0.34 mm.; suffused red; suture, foveae and posterior edge, black; grey suffusion posterior to foveae; antennae: length 1.63 mm.; proximal half, pale brown; distal half, dark brown; segs 8 to 10 black. Pronotum: width 0.54 mm.; suture black; dark grey suffusion except on prominences which are cream; suffused red. Prescutum: darkest anteriorly, and with variable grey suffusion; edged black. Scutum: broad median stripe, yellow; lateral areas orange-red lightly suffused grey; edges narrowly black, prominently black near scutellum. Scutellum and metascutellum cream; area between suffused rose-red with lateral areas brown, suffused red. Post-metanotum: brown to black. Abdomen: rose-red; prominent, wide brown transverse lines on segs 2 to 5, and usually on 6. Genitalia: dark at base of upper plate, and anterior corners of lower plate; claspers and aedeagus as in Text-fig. 43. Length of aedeagus: (5 specimens) Extremes 0.214 mm. to 0.225 mm. Forewings: length 2.73 mm. Hindwings: Cu, as in Text-fig. 4.

Female: Similar to male, but with lines on abdomen more intense and extensive.

Host-plant: *E. paniculata*.

Type Locality: Wamberal, N.S.W.

Types: Holotype male, allotype female, on slide labelled "Wamberal, N.S.W. 16 vi 1960, K. M. Moore. From *E. paniculata*". Slide deposited with AM. Paratypes: 2 slides: Wamberal, 16 vi 1960, to AM. In alcohol: All to AM, from Wamberal, 16 vi 1960, (100 adults); Ourimbah S.F. 8 ix 1960, (15 adults); Kincumber, 18 vii 1960, (50 adults); Kincumber, 7 ix 1960, (50 adults). Pinned: Ourimbah S.F. 6 viii 1958, 1 male, 2 females, to AM. Kincumber, 28 viii 1958, 1 male, 4 females, to AM.

Notes: Lerps: There is considerable variation from round to oval, in the shapes of lerps of *G. permista*.

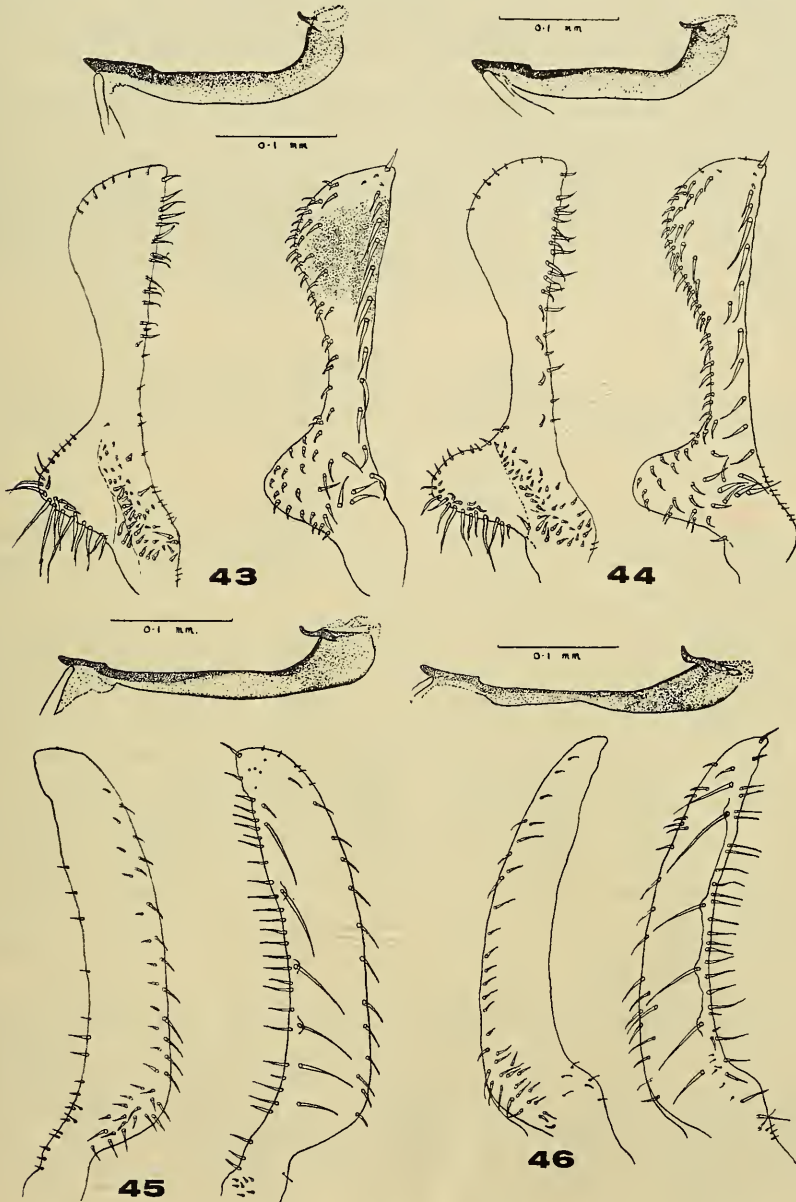
This species can be separated from *G. rivalis* which occurs on the same host, by the absence of brown on scutum, and by the structure of the claspers and aedeagus; and can be separated from *G. mellialata*, sp. nov., which also occurs on the same host, by the paler coloration of the latter species and the structure of the claspers and aedeagus.

GLYCASPIS (ALLOGLYCASPIS) MELLIALATA, sp. nov.

(*L. mel* = honey; *L. alatus* = winged. Referring to the colour of the wings of this species.)

General colour: yellow, lightly marked with grey to black; wings suffused honey-colour.

Male: Head: width 0.61 mm.; vertex, along suture 0.24 mm., width 0.32 mm.; yellow, with foveae pale brown and suture sometimes faintly brown; posterior edge often pale brown; genal processes: length 0.29 mm.; pale yellow, sometimes suffused



Text-fig. 43.—Aedeagus and claspers of *Glycaspis permista*, sp. nov.
 Text-fig. 44.—Aedeagus and claspers of *Glycaspis mellialata*, sp. nov.
 Text-fig. 45.—Aedeagus and claspers of *Glycaspis mirabilis*, sp. nov.
 Text-fig. 46.—Aedeagus and claspers of co-type male of *G. granulata* (Froggatt).

pink; antennae: length 1.80 mm.; pale brown, darkening distally; segs 9 and 10 black. Pronotum: width 0.51 mm.; sometimes lightly marked with brown. Prescutum: apex and anterior edges usually suffused grey. Scutum: longitudinal cream stripe; lateral areas rose-red lightly edged brown. Scutellum and metascutellum cream; area between,

suffused pink and laterally pink suffused pale brown. Abdomen: usually suffused red, with faint brown lines on segs 2 and 3, but often no lines present. Genitalia: pale brown at base of upper plate and anterior corner of lower plate; claspers and aedeagus as in Text-fig. 44. Length of aedeagus: (7 specimens) Extremes 0.203 mm. to 0.225 mm. Forewings: length 2.44 mm.; suffused honey-colour. Hindwings: Cu_1 as in Text-fig. 4.

Female: As male, but with abdomen bright red; lines indistinct on segs 3 to 5.

Host-plant: *E. paniculata*.

Type Locality: Wyong S.F. (Newcastle Forestry District: Wyong subdistrict) near eastern boundary of Compartment 13.

Types: Holotype male, allotype female, on slide labelled "Wyong S.F. 12 viii 1958, K. M. Moore. From *E. paniculata*". Slide deposited with AM. Paratypes: 3 slides: Wyong S.F. 12 viii 1958, to AM. In alcohol: All to AM; from Wyong S.F. 12 viii 1958, (35 adults); Ourimbah S.F. 20 xi 1958, (9 adults); Wamberal, 25 xi 1958, (13 adults, and nymphs); Kincumber, 27 xi 1958, (8 adults, and nymphs). Pinned: Wyong S.F. 17 xii 1958, 1 male, 1 female to AM; Kincumber, 28 viii 1958, 1 male to AM.

Notes: Lerps: Oval.

RECTANGULAR LERPS.

This group at present contains three species only, and adults bear a rhinarium on each of antennal segments 4, 6, 8 and 9, which suggests that these species are of the most recent development within the genus *Glycaspis*.

GLYCASPIS (ALLOGLYCASPIS) MIRABILIS, sp. nov.

(*L. mirabilis* = strange. Referring to the strange shape of lerps of this species.)

General colour: Yellow or turquoise, lightly marked with grey or black; sometimes grey on internal edges of genal processes only.

Male: (Pinned specimens) Head: width 0.68 mm.; vertex: along suture 0.29 mm., width 0.34 mm.; yellow, with foveae and central area along suture, grey to black; genal processes: length 0.34 mm.; yellow; may be green or turquoise distally; antennae: length 1.95 mm.; pale brown with segs 9 and 10 black. Pronotum: width 0.51 mm.; cream, suffused green, with central longitudinal dark area. Prescutum: brown-black. Scutum: broad, median, yellow longitudinal stripe; red lateral areas; posterior border with dark marks contiguous to scutellum. Scutellum, metascutellum and area between, brown-black, red laterally. Abdomen: greenish-yellow; indistinct transverse lines on segs 2 to 5. Genitalia: yellow; claspers and aedeagus as in Text-fig. 45. Length of aedeagus: (14 specimens, Lisarow) Extremes 0.265 mm. to 0.299 mm.; (3 specimens, Cloud's Creek) 0.261 mm. to 0.274 mm. Forewings: length 2.71 mm. Hindwings: Cu_1 as in Text-fig. 3.

Female: Similar to male, but with dark markings more extensive and intense.

Host-plant: *E. saligna*.

Type Locality: Lisarow, N.S.W., 1½ miles along Cutrock Road from level-crossing.

Types: Holotype male, allotype female, nymphs, on slide labelled "Lisarow, N.S.W. 18 ix 1958, K. M. Moore. From *E. saligna*". Slide deposited with AM. Paratypes: 11 slides: Lisarow, 18 ix 1958, 8 to AM, 1 to BM, 1 to CS, 1 to FC. 2 slides: Lisarow, 3 xii 1958, to AM. 5 slides: Cloud's Creek S.F. 6 v 1959, to AM. Pinned: Lisarow, 18 ix 1958, 2 males, 2 females to AM; 2 males, 3 females to CS.

Notes: Lerps: Rectangular; 5 mm. × 3.5 mm. (last instar). Exuviae often attached to outside of lerp.

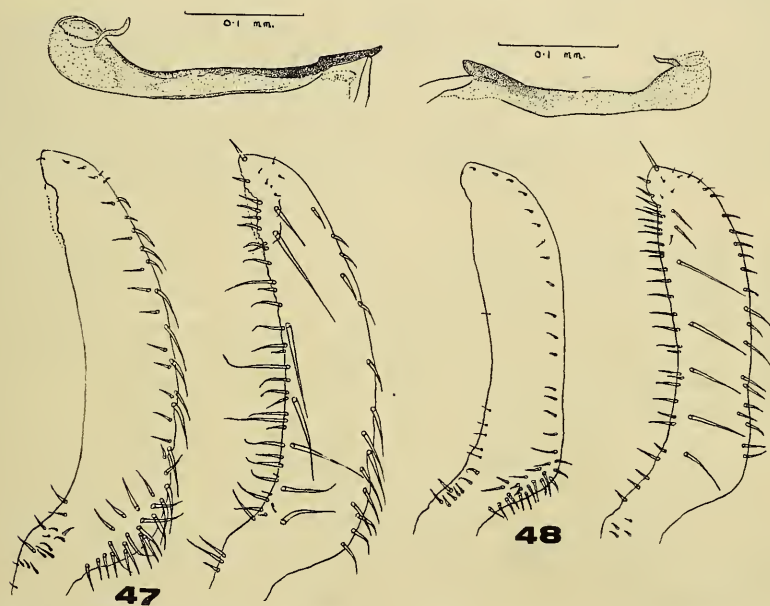
GLYCASPIS (ALLOGLYCASPIS) GRANULATA (Froggatt).

Froggatt's description of this species is inadequate for identification purposes, and it is considered necessary to re-describe the species.

General colour: lemon-yellow or yellow-green, marked with grey to black.

Male: Head: width 0.73 mm.; vertex: along suture 0.24 mm., width 0.39 mm.; suffused pink and lightly marked with black on foveae and posterior border; genal processes: length 0.39 mm.; yellow; dark on inner edges; antennae: length 2.02 mm.;

segs 1 to 4 brown; 5 to 8 dark brown; 9 and 10 black. Pronotum: width 0.59 mm.; suffused pink; central area cream; grey-black areas each side; prominences yellow, with dark mark at bases. Prescutum: edges narrowly black, except posterior border. Scutum: yellow median area, narrowly edged black laterally, most pronounced contiguous to scutellum; orange laterally. Scutellum and metascutellum yellow; never dark as in *G. mirabilis*, but sometimes a small dark central area on scutellum of females; area between, rose-red edged narrowly with black. Post-metanotum: pale yellow edged anteriorly and laterally with black. Abdomen: narrow black transverse line on each of segs 2 to 5. Genitalia: dark area on base of upper plate and at anterior corner of lower plate; claspers on edge, and aedeagus distorted in the drawings of Froggatt's co-type male (Text-fig. 46). Claspers and aedeagus of *G. granulata* reared from *E. botryoides* from Kurnell, N.S.W., are given in Text-fig. 47. Length of aedeagus: (4 specimens from Kurnell and Mona Vale) Extremes 0.284 mm. to 0.290 mm. Forewings: length 2.95 mm. Hindwings: Cu_1 as in Text-fig. 3.



Text-fig. 47.—Aedeagus and claspers of *G. granulata* reared from *Eucalyptus botryoides* from Kurnell, N.S.W.

Text-fig. 48.—Aedeagus and claspers of *Glycaspis siliciflava*, sp. nov.

Female: Similar to male, but with dark markings more extensive; often with red dorsal suffusion.

Host-plant: *E. botryoides* Smith (bangalay).

3 slides: Kurnell, N.S.W. 13 vi 1960 K. M. Moore; bred from *E. botryoides*. Deposited with AM. 3 slides: Mona Vale N.S.W. 7 ix 1958 K. M. Moore; bred from *E. botryoides*. Deposited with AM. In alcohol: Kurnell, N.S.W. 13 vi 1960, K. M. Moore; 9 adults to AM. Pinned: Material, the species of which is not determined, collected from Mona Vale, N.S.W. 24 ix 1958, K. M. Moore, (7 males, 6 females) from hosts either *E. robusta* or *E. botryoides*, are in the collection of AM.

Notes: Lerp: Rectangular; white or yellow; approximately same size as those of *G. mirabilis*, but more peaked, and usually opaque.

GLYCASPIS (ALLOGLYCASPIS) SILICIFLAVA, sp. nov.

(*L. siliceus* = of flint; *L. flavus* = yellow. Referring to the appearance of the lerps.)

General colour: There is considerable variation of coloration within the species. Green, yellow, with variable amounts of red, with a dark, longitudinal medio-dorsal

area along centre of vertex, pronotum, all of prescutum, on scutum contiguous to scutellum only, whole of scutellum and metascutellum, and on post-metanotum.

Male: Head: width 0.71 mm.; vertex: along suture 0.22 mm., width 0.34 mm.; genal processes: length 0.37 mm.; suffused red; antennae: length 1.83 mm.; pale brown; segs 9 and 10 black. Pronotum: width 0.59 mm. Abdomen: small, transverse lines usually on segs 2 to 5. Genitalia: black on base of upper plate and anterior corner of lower plate; claspers and aedeagus as in Text-fig. 48. Length of aedeagus: (9 specimens) Extremes 0.216 mm. to 0.236 mm. Forewings: length 2.71 mm.; suffused pale honey-colour on apical half. Hindwings: Cu, as in Text-fig. 3.

Female: Longitudinal medio-dorsal area darker than on male; red suffusion often on whole of dorsal area except medio-dorsal area on scutum; black lines on abdomen much larger than on the male, and usually for length of segments laterally, but narrower medianly; wings with honey-colour more intense.

Host-plant: *E. robusta*.

Type Locality: Wamberal, N.S.W.

Types: Holotype male, allotype female, on slide labelled "Wamberal, N.S.W. 25 xi 1958, K. M. Moore. From *E. robusta*". Slide deposited with AM. Paratypes: 6 slides: Wamberal, 25 xi 1958, 3 to AM, 1 to BM, 1 to CS, 1 to FC. 5 slides: Wamberal, 25 xi 1958, (pale adults) to AM. 4 slides: Wamberal, 25 xi 1958, (dark adults) to AM. 1 slide: Lisarow, 9 viii 1958, to AM. 2 slides: Mona Vale, 25 ix 1958, to AM. In alcohol: Wamberal, 25 xi 1958, 40 adults; Wamberal, 2 x 1958, 30 adults; Wamberal, 16 x 1958, 6 adults, and nymphs; all to AM. Pinned: Wamberal, 16 x 1958, 3 males, 3 females, to AM.

Notes: Eggs: Orange-red; singly, or in twos or threes, on either surface of leaf. Lerp: Rectangular; white to deep yellow; up to 5.5 mm. × 4 mm.; often yellow when on lower leaf-surface and white when on upper surface. Nymphs: Coloration variable; last instar may be almost black. Some exuviae are shed outside of the lerp. Adults: Dark areas on the male may be only a pale grey suffusion. Slides of pale and dark specimens, collected on the same day from the same area and host, were made and determined to be the same species.

DISCUSSION ON SPECIES OF THE SUBGENUS ALLOGLYCASPIS.

The coloration and morphology of the last instar nymphs of *G. baileyi*, *G. imponens*, *G. montana*, *G. rivalis* and *G. pilata* suggest that they possess some affinity as a separate group, although the morphological characteristics of the aedeagus and claspers of the adults appear of insufficient homogeneity to warrant such grouping.

There are similarities in the morphology of the aedeagus of *G. montana*, *G. struicis*, *G. pratensis*, *G. australoraria*, *G. amnicola*, *G. oraria* and *G. ignea*, but the grouping of these species is considered to be inadvisable at present.

Similarities in the structure of the aedeagus are evident in *G. suavis*, *G. lactea*, *G. locaridensis*, *G. kurrajongensis*, *G. permista*, *G. mellialata* and *G. siliciflava*, but the shapes of lerp: constructed by these species require three different groupings, and their claspers are of variable shapes.

Each of the species *G. suavis*, *G. pilata* and *G. rivalis*, which construct round lerp:, and also *G. minuscula*, the lerp: of which were not seen, possess scimitar-shaped claspers, as do each of the species *G. mirabilis*, *G. granulata* and *G. siliciflava*, which construct rectangular lerp:. The homogeneity in the structure of these claspers suggests some affinity between the two groups, irrespective of the shapes of the lerp: constructed by them. The possibility of such affinity is supported by the consistent shape of Cu, of the hindwing in each of these species being as that in Text-fig. 3.

Further conjecture on possible evolutionary trends within *Alloglycaspis* appears unwarranted until considerably more material is studied.

Acknowledgements.

Without the continued interest shown in this project, and considerable assistance given, by Mr. L. A. S. Johnson of The Royal Botanic Gardens, Sydney, in identifying

the numerous *Eucalytus* spp. hosts, for which I am greatly indebted to him, the value of the data from these investigations would have been considerably reduced.

Grateful acknowledgement is made to Dr. V. F. Eastop, of The British Museum, London, for much assistance and time willingly given while at C.S.I.R.O., Canberra, in the preparation of a considerable amount of the slide-material used in these investigations.

Advice concerning the taxonomy, given by Dr. K. H. L. Key and Mr. K. L. Taylor, both of the Division of Entomology, C.S.I.R.O., Canberra, and assistance with the nomenclature by Mr. R. M. Moore, is gratefully acknowledged.

Thanks are extended to Mr. J. Schumacher of The Forestry Commission of N.S.W. for the photograph of the galls; and to those who assisted with criticism of the manuscript.

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EXPLANATION OF PLATES VI-VII.

Plate vi.

Coverings of *Glycaspis* (*Glycaspis*) spp. (Psyllidae).

Fig. 1.—Galls on *Eucalyptus haemastoma* (approx. natural size). Figs 2, 3.—Flat lerps (ca. 7 ×) covering indentation in leaf-surface. Fig. 4.—Round, conical lerps (ca. 10 ×) showing typical grouping. (Note emergence-holes of parasitic Chalcidoidea: Hymenoptera.)

Plate vii.

Coverings of *Glycaspis* (*Alloglycaspis*) spp. (Psyllidae).

Fig. 5.—Round, conical lerp (ca. 10 ×) on *Eucalyptus saligna*. Fig. 6.—Dome-shaped lerp (ca. 10 ×) on *E. saligna*. Fig. 7.—External filaments on round, conical lerp (ca. 6 ×). Fig. 8.—Oval lerp (ca. 7 ×). Fig. 9.—Rectangular lerp (ca. 15 ×). (Side view.) Fig. 10.—Rectangular lerp (ca. 10 ×). (From above.)

